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# THE SURVEY

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No. 1

## GENERAL NOTES

RECEIVED

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U. S. Department of Agriculture

Guest of N. Y. Club.--On December 14 Dr. Gabrielson attended the annual dinner of the Boone and Crockett Club in New York City and made a short talk.

Attends Canadian Conference.--Mr. Henderson attended the conference of Dominion and Provincial Game Officials in Ottawa from January 16 to 18. He spoke on conservation in the United States. Enroute to Washington he conferred with Regional Director S. Barry Locke at Boston, Mass.

Discusses Management Problems.--While on vacation in the Southeast, W. L. McAtee spent January 4-8 at Raleigh, N. C., where he discussed farm-game management problems with members of the State Division of Game and Inland Fisheries, inspected management areas, and held a conference with Ross Stevens' students in wildlife management at the State College.

On January 16, Mr. McAtee attended a conference in the New Jersey Bureau of Plant Industry at Trenton, the purpose of which was perfecting plans for a study of management of bird populations as a means of exerting greater control over defoliating insects.

Personnel Changes.--Effective January 1, 1939, William M. Rush was relieved of active duty as regional director, Region 1, and Thomas B. Murray, formerly district agent, Predator and Rodent Control, in Idaho, was designated acting regional director.

Effective the same date, Stanley P. Young was assigned to special research work. Dorr D. Green succeeded Mr. Young as chief of the Division of Predator and Rodent Control.

Mr. Young is now devoting himself to the completion of studies of the timber wolf, a subject in which he has been especially interested for many years. In the course of his investigations he has developed much information concerning the wolf, and this material will eventually be published in the North American Fauna series, under joint authorship with E. A. Goldman.

## ADMINISTRATION

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative-Field Office" (AFO) series since the last issue (November-December 1938) of the Survey.

No. 253, Special report on Bureau-owned motor vehicles, motorized, power-operated, and heavy duty equipment. (December 7.)

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- No. 254. Manuscripts for outside publication. (December 7.)
- No. 255. Submission of property inventory reports. (December 14.)
- No. 256. Purchase of plain envelopes to be discontinued. (December 14)
- No. 257. Bird specimens needed for Bureau of Biological Survey collection. (December 14.)
- No. 258. Motor transportation and other accidents due to neglect by an employee. (January 3.)
- No. 21. Amendment No. 7. Clause to be included in advertisements involving the use of Federal Specifications. (December 2.)
- No. 48. Revised. Cooperation necessary in expediting payment of vouchers. (November 30.)
- No. 57. Amendment No. 3. Cooperation with the National Emergency Council. (November 25.)
- No. 126. Amendment No. 1. Procedure for placing orders for contract purchases with regional offices. (November 23.)
- No. 130. Revised. Predatory Animal and Rodent Control Policy on Refuges under the jurisdiction of the Biological Survey. (November 30.)
- No. 216. Amendment No. 1. Reporting of fires involving damage to Government property. (January 12.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 56. Contracts for the procurement of Alemite guns, cartridge type lubricating guns, and measuring tapes (Class 41). (Nov. 25.)
- No. 57. Contracts for the procurement of electrical supplies (Class 17). (November 25.)
- No. 58. Mandatory contracts for the procurement of floor coverings, Class 27, Supplement No. 1 for the period October 1, 1938, to September 30, 1939. (November 30.)
- No. 59. Supersedes No. 13 and Amendment No. 1. Commodities mandatorially obtainable from Federal Prison Industries, Inc. (December 8.)
- No. 60. Contracts for the procurement of portable drinking fountains, Class 63, Supplement No. 3. (December 14.)
- No. 61. Contracts for the procurement of paints and paint ingredients, Class 52. (December 15.)
- No. 62. Contracts for the procurement of fire-surfacing and heat-insulating material, Class 32. (December 15.)
- No. 63. Changes in Procurement Division Contracts. (December 16.)
- No. 64. Contracts for the Procurement of telephones and parts, Class 17, Supplement No. 4. (December 17.)
- No. 65. Contracts for the procurement of fire hose, cotton and linen. Class 33. (December 22.)
- No. 66. Mandatory contracts for the procurement of books. (Class 35.) (December 30.)
- No. 67. Contracts for the procurement of hospital, laboratory and surgical apparatus and supplies, including first-aid kits (Class 57.) (January 9.)



- No. 68. Changes in Procurement Division Contracts. (January 10.)
- No. 69. Mandatory contracts for the procurement of battery cables, tire chains, clutch facings, brake linings, repair parts and accessories for motor vehicles, tractors, and road-building machinery, including air compressors, graders, shovels, terraces, etc., for the period January 1 to December 31, 1939. (Class 8, and Class 66, Supplement No. 1.) (January 11.)
- No. 32. Supplement No. 7. Supersedes Supplement No. 5, dated October 7, 1938. Contract for service-station deliveries of gasoline and lubricating oil in the State of Ohio for the period January 1 to March 31, 1939. (January 9.)
- No. 32. Supplement No. 8. Supersedes Supplement No. 6, dated October 18, 1938. Contract for service-station deliveries of gasoline, lubricating oil, lubrication service, and anti-freeze, in the Northeastern States for the period January 1 to March 31, 1939, inclusive. (See note Page 2.) (January 11.)
- No. 35. Supplement No. 2. Mandatory contract covering nonelectric blasting caps, (exploders), without fuse, for dynamite, class B, for the period November 15, 1938, to June 30, 1939. (Class 4, Supplement No. 4.) (January 12.)
- No. 37. Supplement No. 1. (1) Contracts for repair of office machines for the period January 1 to June 30, 1939. (Class 54.) (2) Report required on expenditures for cleaning, repairing, and overhauling of adding and computing machines during the period July 1 to December 31, 1938. (See page 6.) (January 13.)

#### PUBLIC RELATIONS

Broadcasts.---By January 31 the Bureau had received 3,774 requests from listeners to the Farm and Home Program, who had been offered the complete report of the big-game inventory recently compiled by the Section of Wildlife Surveys, Division of Wildlife Research. The inventory was discussed in two radio talks by Howard Zahniser, on January 20 and 27. Other talks by Mr. Zahniser since the last issue of THE SURVEY are as follows: "Food for the Birds in Winter," December 9; "Three Areas for Antelope," January 6; and "Submarginal Lands for Wildlife," January 13. On December 23 and 30 Mr. Zahniser participated in two round-table programs in which the regular contributors to the Department's Farm and Home programs discussed "Looking Back over 1938" and "We Look at the New Year."

Personnel Changes.---Miss Hester Drayton, clerk-typist in the Editorial Section, was retired on January 31 after 2-1/2 years service in the Bureau. Miss Drayton, who transferred from the Office of Information, had been in poor health for the past year and a half. She entered the Government service in 1906 and served continuously until 1918, in which year she resigned. In 1934 she returned to the Mailing List Section of the Office of Information. She was succeeded by Mrs. Rosa L. Letcher.

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Report of the Chief of the Bureau of Biological Survey, 1938. By I. N. Gabrielson. Annual Report, 68 pp. Received December 30, 1938.
- Early winter food of ruffed grouse on the George Washington National Forest. By A. L. Nelson, Associate Biologist, Section of Food Habits, Division of Wildlife Research, Bureau of Biological Survey; Talbot E. Clark, Assistant Conservationist, George Washington National Forest, Forest Service; and W. W. Bailey, Assistant Superintendent of Game Propagation, Virginia Commission of Game and Inland Fisheries. Circular No. 504, 38 pp. December 1938. Received Jan. 19, 1939.
- Drained areas and wildlife habitats. By F. R. Kenney, Senior Water Utilization Economist, Division of Land Economics, Bureau of Agricultural Economics, and W. L. McAtee, Technical Adviser, Office of the Chief, Bureau of Biological Survey. Yearbook Separate No. 1611, 8 pp. 1938. Received Jan. 25, 1939.
- Big-game inventory of the United States, 1937. Compiled in the Section of Wildlife Surveys, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-122, 13 pp. Jan. 1939. Received Jan. 25.
- Preparation and identification of plant specimens in the Bureau of Biological Survey. Prepared in the Section of Food Habits, Division of Wildlife Research. Bi-1518, 2 pp. Jan 1939. Received Jan. 24.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

- Bassett, C. F. Livermeal--Is it necessary in the summer feeding of adult male foxes? Amer. Fur Breeder 11 (5): 34. Nov. 1938. (Also in Black Fox Mag. 22 (8): 28-29. Dec. 1938.)
- Bennett, L. J. Wildlife unit at Penn State. Penn State Farmer 4 (2): 22, 48, illus. Nov. 1938.
- Bennett, L. J. (with G. O. Hendrickson) Adaptability of birds to changed environment. Auk 56: 32-37, illus. Jan. 1939.
- Burleigh, T. D. Alta Mira oriole in Texas: An addition to the A. O. U. Check List. Auk 56: 87-88. Jan. 1939.
- (With G. M. Sutton) A new blue bunting from Tamaulipas. Auk 56: 71-72. Jan. 1939.
- Cottam, C. Great blue heron swimming. Condor 41: 37. Jan./Feb. 1939.
- Cottam, C. Nesting of an eastern kingbird in a deserted oriole nest. Condor 40: 259. Nov./Dec. 1938.
- Enders, R. K. The ovum of the mink (Mustela vison). Anat. Rec. 72: 469-471, illus. Dec. 25, 1938.
- Gabrielson, I. N. Summer notes from Blue Sea Lake, Quebec. Canadian Field Nat. 52: 79-87. Sept. 1938.
- Goldman, E. A. A new pocket gopher of the genus Zygogeomys. Biol. Soc. Wash. Proc. 51: 211-212. Dec. 23, 1938.
- Henry, C. J. Golden eagle takes wounded horned owl. Auk 56: 75. Jan. 1939.

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- Hicks, L. E. Western Henslow's sparrow taken in West Virginia. Wilson Bull. 50: 290. Dec. 1938.
- Southern Downy woodpecker in Ohio. Auk 56: 83-84. Jan. 1939.
- Jewett, S. G. Anthony green heron in the State of Washington. Condor 41: 33. Jan./Feb. 1939.
- A rattlesnake kills a California quail. Condor 41: 30. Jan./Feb. 1939.
- Marshall, W. H. Notes on fur bearers. Univ. Idaho Bull. 33 (22): 82-85. Dec. 1938.
- McAtee, W. L. Two apparently overlooked names for North American birds. Auk 56: 88-89. Jan. 1939.
- Wildfowl food plants: Their value, propagation, and management. viii 141 pp., illus. Collegiate Press, Inc., Ames, Iowa, Jan. 1939.
- North American Atlantic salmon, in Comparative studies of the fluctuations in the stocks of fish in the seas of north and west Europe [by A. G. Huntsman. Conseil Perm. Internat. Expl. Mer. Rapp. et Procès-verbaux des Réunions. 101 (4,1,B), 1938.] (Review) Auk 56: 102-103. Jan. 1939.
- Miller, J. P. Farmer-sportsmen relationships. New York State Sportsman 4 (2): 5-12. Dec. 1938.
- Murie, O. J. Four new birds for St. Lawrence Island, Alaska. Condor 40: 227. Sept./Oct. 1938.
- Oberholser, H. C. Great white heron in Pennsylvania. Cardinal 5 (1): 15-16 Jan. 1939.
- Oberholser, H. C. The season (ornithological): Washington (D. C.) region. Bird-Lore 40: 369-370.
- Scott, T. G. Wildlife mortality on Iowa highways. Amer. Midland Nat. 20: 527-539. Nov. 1938.
- Sheldon, H. P. The story of the 1938 waterfowl regulations. Country life and Sportsman 74(5): 82-83, 96, illus. Sept. 1938.
- Guns and game: Gun terminology: Savage utility: Savage 20-bore; over and under. Country Life and Sportsman 74 (5): 11, 95, illus. Sept. 1938.
- Taylor, W. P. Conservation of Texas wildlife. Southwestern Sports Mag., pp. 14, 15, 23, illus. Nov. 1938.
- Williams, C. S., and A. H. Trowbridge Wilson phalarope host of Nevada cowbird. Auk 56: 77. Jan. 1939.
- Zahniser, H. Indoors and out. Nature Mag. 31: 575. Dec. 1938.
- Indoors and out. Nature Mag. 32: 7. Jan. 1939.

Press and Radio Information and Addresses, copies of which (chiefly in mimeograph) may be obtained from the Division of Public Relations, have been issued as follows:

- Fined for conspiring to violate Federal fur law. Press statement 936-39. Released December 5.
- Returns on fur farming survey come in rapidly. Press statement 997-39. Released December 14.



Waterfowl sellers jailed and fined. Press statement 993-39.  
Released December 14.

Big Alaskan bears holding their own. Press statement 941-39.  
Released December 18.

Wildlife gaining from wise land-use program. Press statement 1059-39.  
Released December 30.

Young assigned to wolf studies. Press statement 1086-39. Released  
December 30.

To study nutrition needs for bobwhite. Press statement 1207-39.  
Released January 20, 1939.

Judge warns against interference with Federal bird law enforcement.  
Press statement 1223-39. Released January 23, 1939.

Tularemia not found in domestic rabbits. Press statement 1241-39.  
Released January 25, 1939.

Commission approves purchases of lands for wildlife refuges. Press  
statement 1247-39. Released January 26, 1939.

Violators of Federal bird law sent to jail. Press statement 1276-39.  
Released January 28, 1939.

5,000,000 big-game animals in the U. S. Press statement 1227-39.  
Released January 29, 1939.

U. S. wildlife bureau gives estimate of State's big game. Press  
statement 1251-39. Released January 29, 1939.

Wildlife refuges, started in 1903, now total 250. Clip sheet No. 1074.  
Released January 29, 1939.

Food for the birds in winter. Radio talk by Howard Zahniser, National  
Farm and Home Program. December 9.

Looking back over 1938. Radio talk by Department of Agriculture group,  
including Howard Zahniser. National Farm and Home Program. December 23.

We look at the New Year. Radio talk by Department of Agriculture group,  
including Howard Zahniser. National Farm and Home Program. December 30.

Three areas for antelope. Radio talk by Howard Zahniser. National Farm and  
Home Program. January 6, 1939.

Submarginal lands for wildlife. Radio talk by Howard Zahniser, National  
Farm and Home Program. January 13, 1939.

Five million big-game animals. Radio talk by Howard Zahniser. National  
Farm and Home Program. January 20, 1939.

Beavers regulate water. Farm Flash. Released January 3, 1939.

Duck come-back. Farm Flash. Released January 10, 1939.

Fence for wildlife. Farm Flash. Released January 10, 1939.

Rodents in orchards. Farm Flash. Released January 21, 1939.

## WILDLIFE RESEARCH

Wildlife Surveys

Receives Appointment.--Effective January 12 William H. Long has been appointed as junior biologist to do research work on the physiological ecology of game birds, a cooperative project undertaken by the Cornell Agricultural Experiment Station, New York State Conservation Department, and the Bureau of Biological Survey.

Mr. Long, who will be stationed at Cornell University, Ithaca, N. Y., was formerly engaged in nutritional and physiological studies of game birds at the University of Michigan. The specific research with which he will now be concerned will deal with the physiological ecology and nutritive requirements necessary for optimum conditions for growth, reproduction, and maintenance of ring-necked pheasants and ruffed grouse.

Discusses Work of Bureau at Cornell.--Leo K. Couch addressed several groups of wildlife conservation students at Cornell University, Ithaca, N. Y., on January 19 and 20, speaking on the work being conducted by the various divisions of the Bureau. While at Cornell, he also conferred with Mr. Long.

Visit Mammal Laboratory.--Visitors to the mammal laboratory during December included Edwin C. Galbreath, of the Field Museum of Natural History, Chicago, Ill., and Dr. Chas. C. Adams, of the New York State Museum, Albany, N. Y. Mr. Galbreath obtained moose skull measurements, and Dr. Adams conferred with mammalogists of the section.

Transfers to Wildlife Surveys.--Miss Hilda M. Lorenz, formerly with the Social Security Board, transferred to the Biological Survey on December 16. She is employed as junior clerk-stenographer in the Section of Wildlife Surveys.

Wichita Turkey Census Progresses.--The turkey census of the Wichita Mountains Wildlife Refuge, Cache, Okla., is progressing, according to Frank B. McMurry. Several new flocks have been found, and these are being plotted on a wall map. As flocks around the periphery of the refuge migrate during the fall and winter to adjacent fields of fall-sown grain to eat the green, tender sprouts, and as they also work up and down several of the larger stream bottoms leaving the refuge, an effort has been made to keep an accurate check on the number going back and forth between the refuge and private land. Earl Drummond and Mr. McMurry have asked many of the nearby farmers and stockmen how many wild turkeys they have observed on their holdings. Observations were made of feeding flocks. The roosting trees of several flocks were found by following groups in the evening until they went to roost.

Tularemia in Iowa.--An outbreak of tularemia in southern Iowa was reported by Thomas G. Scott, leader of the Iowa Cooperative Wildlife Research Unit, on December 12, 1938. Diagnosis of the disease in humans shows the range extends south of a line from the vicinity of Dubuque on the Mississippi River southwest to the vicinity of Hamburg. The heaviest occurrence appears to be in the south-central part of the State immediately north of the Iowa-Missouri line. In this area there is an unusually heavy population of cottontails. Up to December 12 about 60 cases of infections in humans had been reported. The disease first came to attention about November 28. It appears to be affecting the cottontails most severely, although infection has been reported in striped skunks and house cats.

Aerial Review of Cover Relationships.--Harold L. Blakey reported that he had the opportunity to make a leisurely trip by aeroplane from Atlanta to Charleston, S. C., without cost to the Government, to get a broad picture of cover relationships of the wild turkey. In the absence of adequate, State-wide cover maps, the procedure was valuable in the evaluation of both past and present conditions as they are discovered on the ground over this 250-mile inland course. Mr. Blakey was impressed with the importance of the coastal region of South Carolina as part of the wild turkey range. From Atlanta eastward to the South Carolina State line there appears to be little, if any, area supporting sufficient forest cover to give turkeys the cover and protection they require. Human occupation and agricultural development appear to negate any possibility of their existence under any system of open range management. From Augusta to the ocean is a broad strip of well-timbered country holding evident possibilities for wild turkeys under both natural and managed conditions. This trip has helped considerably in understanding and mapping the present distribution of birds throughout the Augusta-to-Charleston territory.

Attends Hearings on River Developments.--Mr. Blakey attended public hearings at Columbia and Cheraw, S. C., conducted by the U. S. Engineers relative to proposed developments for navigation and hydroelectric power on the Santee and Pee Dee Rivers in North Carolina and South Carolina.

Complete Ecological Study of Aleutian Islands.--The 1938 Biological Survey expedition to the Aleutian Islands completed the field work started in 1936 and 1937 to assemble information on the wildlife resources and ecological relationships of this interesting island chain. The survey was primarily made to describe the islands, fauna and flora and to develop a blue fox management policy for the Aleutian Islands Wildlife Reservation. The resource survey has been under the personal direction of O. J. Murie, senior biologist, Division of Wildlife Research.

The personnel of the 1938 expedition was divided into three groups: (1) Bureau staff members, with Dr. Victor B. Scheffer in charge, making a resource survey, (2) the Alaska Game Commission, represented by Douglas Gray,



studying law enforcement and the economic aspects of the blue fox, caribou, and domesticated animals, and (3) a group of national magazine writers assembling material and photographs on the natives and wildlife of the islands.

Incidental to the collection of vertebrate animals and plants on this survey many specimens of other groups were procured. Among these was a collection of beetles discussed by Dr. Melville H. Hatch, of the University of Washington, in a paper entitled, "Report on the Coleoptera Collected by Dr. Victor B. Scheffer on the Aleutian Islands in 1937," which was published in the Pan-Pacific Entomologist, Vol. 14, No. 4, pp. 145-149, October 1938.

Tanned Specimen Skins Renovated.--One thousand tanned mammal skins from the Bureau's collection were cleaned and reconditioned in the taxidermy shop in little more than a month's actual operating time by C. H. M. Barrett and three W. P. A. assistants. The work was accomplished with the aid of the new fur drum installed in the shop last August. Considerable experimentation has been necessary to determine the best technique. The skins now passing through the operations come out in excellent condition, and the efficiency of the method is well shown by the results. All skins of lynx, bobcats, badgers, and skunks in the collection, and about one-third of the wolves, have been processed during 1938.

Ducks Concentrate, Hunters Shoot.--Approximately 250 persons, over half of them non-residents, hunted ducks in Colorado County, Tex., on November 15, according to a report by Dr. Walter P. Taylor, leader of the Texas Cooperative Wildlife Research Unit. Ducks were abundant, but water was scarce, and the birds were concentrated in restricted areas. Hunters were at virtually every concentration area, however, because landowners grant permission far more generously to hunt migratory birds than they do to hunt resident species.

Many hunters crawled to ponds and shot into flocks of 50 to 10,000 ducks as the birds sat on the water or arose in a mass. Bags were large, but the hunting method was hardly sporting, and about as many ducks were crippled and lost as were actually bagged. Species taken were about 50 percent pintails, 20 percent northern mallards, 15 percent green-winged teal, 10 percent mottled duck or southern mallard, and 5 percent miscellaneous (widgeon, ringneck, scaup, spoonbill, gadwall, and blue-winged teal.) Pintails were always killed in greatest numbers on "open" ponds, or those lacking shoreline vegetation, and mallards on "covered" ponds, or those grown to coffee beans (*Daubentonia* sp.), sedges, and rushes, demonstrating that pintails and mallards prefer different types of water areas. The crops and gizzards of about 100 ducks were examined and found to contain more than 90 percent rice.

Give Wildlife Short Course.--A discussion of various wildlife problems was held at the Agricultural and Mechanical College of Oklahoma, Stillwater, Okla., on November 16 and 17. Dr. W. P. Taylor, with Dean B. B. Harris and Dr. J.K.G. Silvey, of the North Texas State Teachers College, Denton, Tex., organized and led the course at the request of Professor C. E. Sanborn, chairman of the Oklahoma Wildlife Conservation Federation. Chas. H. Rouse and Frank McMurry of the Wichita Mountains Wildlife Refuge laboratory, also assisted.

Island Game-bird Study Continues.--The program to study game birds on an island under natural conditions, (reported in THE SURVEY, September-October 1938, p. 191-192) is progressing, according to a report by Hugh Ross Newcomb, graduate worker, in charge. A recent inventory showed that in two nesting seasons the 8 Chinese pheasants--2 cocks and 6 hens--originally placed on Protection Island, Wash., have increased to 76 birds--33 cocks and 43 hens. Losses undoubtedly were caused by hunters and predators.

Deer Project in Utah.--Dr. D. Irvin Rasmussen, leader of the Utah Cooperative Wildlife Research Unit, reports that the unit cooperated with the Forest Service and the State Fish and Game Department in making a careful check and recording detailed weights and measurements of deer removed from the Cache National Forest during the hunting season (Oct. 20-30). The unit conducted a full time checking station at the mouth of Logan Canyon and two at Green and Providence Canyons. Of 1,024 hunters entering at the three stations, 449 checked out successful.

For the first time in over 20 years antlerless deer were removed from the Utah portion of the forest. Under 100 special permits issued in Logan Canyon, 57 does and 24 fawns were removed.

Dr. Rasmussen reports that during the latter part of December Everett Doman, student assistant, made a forage inventory of the census area in Logan Canyon, where careful inventories have been made during the last four winters. This continues the work started by J. L. Sovy 2 years ago to obtain data on actual forage removal on the winter ranges. Besides the above work, regular inventories were made of the area with the assistance of the wildlife management classes at the Utah State College. On December 17, the group counted 64 does, 47 fawns, 17 bucks, and 9 unidentified deer on the 500-acre area.

Ecological Relationship between Cottontails and Woodchucks.--John D. Boule, graduate assistant, spent much time during December in carrying on field studies of the ecological relationship between cottontails and woodchucks, according to Dr. Logan J. Bennett, leader of the Pennsylvania Cooperative Wildlife Research Unit. Observations are being made on the denning habits, predation, take by hunters, and food and cover requirements of cottontails, and on the extent to which they use woodchuck dens during the winter months. Dr. P. F. English and Dr. Bennett, with the aid of Game Protectors Sam Reed and E. M. Woodward, ear-tagged, sexed, and weighed 380 cottontails that were released in Centre County during December and early in January.

Studies Cats.--In November Paul V. Jones, graduate student at the Texas unit, saw 41 cats along 2,555 miles of highways and collected 9. The contents of 13 cat stomachs consisted mainly of garbage, carrion, cottonrats, hispid pocket mice, and house mice, but included also remains of an Attwater prairie chicken, a meadowlark, and a mourning dove.

Experiment with Deer Repellent.--A study of the value of a mixture of lime and cow dung as a deer repellent was begun in a white spruce plantation by John Pearce in cooperation with Siegfried Weiss at the Childs-Wolcott Estate, Norfolk, Conn. Three plots of 100 trees each were marked out, two being treated 100 percent and 50 percent, and the third left untreated. To see if the treated plants are retarded in any way, arrangements have been made for monthly examination of browsing and for follow-up work after the growing season starts. Unrecorded results from last year's experiment indicate the treatment has definite value. It is easily applied and economical to make.

Hurricane Damages Reservation.--The hurricane that swept New England on September 11 struck portions of the Pillsbury Reservation, N. H., with full force. Except for an occasional lone apple, the fruits of all species of trees were blown off. This means loss of persistence data for this year on all plants. Crops this fall were not abundant, and when Mr. Pearce visited the reservation on November 20 practically all the fallen fruit had been eaten. Ten to fifteen percent of the plants selected for study this summer were uprooted or broken down, chiefly by larger trees that were windthrown or broken. The destruction was very erratic, however, and windblown areas 95-100 percent down were adjacent to those that had suffered no windthrow. Original estimates place the timber loss at about 5,000,000 board feet.

There are 1 to 20-acre patches that are masses of uprooted trees fallen over each other in great confusion. Mr. Pearce reported that good tracing snow showed wildlife was avoiding these dense areas. In time, it is likely the different species will work runways through these places and use them for protective cover. Sprout growth, seedlings, and herbaceous growth will be much more abundant this spring. It is planned to follow up the wildlife usage of them, as they are natural equivalents of the so-called "jungle slashings" practiced on some game management areas.

Obtain Data on White-tailed Deer Killed During the 1938 Open Season.--An Associated Press dispatch estimated that 45 deer were killed during the 1938 season on white-tailed deer in the Black Warrior Forest. The season opened on December 5 and closed on December 10, according to Dr. Allen H. Pearson, leader of the Alabama Cooperative Wildlife Research Unit. The hunt was conducted jointly by the Forest Service and the Alabama Department of Conservation of Game, Fish, and Seafoods. Each hunter issued a permit was given a choice of one of the three 2-day hunting periods. The project leader and a graduate scholar, T. Z. Atkeson, remained in the forest during the first 4 days of the hunt and obtained data from 29 deer. Exactly how many deer were killed in addition to those examined is not known.

Trap Deer on Overpopulated Ranch.--Dr. Paul D. Dalke, leader of the Missouri Cooperative Wildlife Research Unit, observed the trapping of deer by Forest Service officers on the Skaggs Ranch, Taney County. The over-population



of deer on the 3,500-acre enclosed ranch, resulted in malnutrition and a general run-down condition in the herd. Fawn mortality is high despite artificial feeding. Recommendations for corrective measures were discussed with Mr. Skaggs and L. W. Hornkohl, Forest Officer in charge. Six Pisgah-type deer traps were used with good results. In one week, Mr. Hornkohl trapped 50 deer for the Clark and Gardner National Forests. Both native and Wisconsin deer are on the preserve, the two apparently interbreeding freely, as judged from the characteristics of many animals.

#### Food Habits Research

Make 14th Annual Bird Census.---On December 23 Dr. Gabrielson, Mr. Nelson, Mr. Martin, and Dr. Cottam made the fourteenth annual Christmas bird census at Port Tobacco, Md. Fifty-eight species of birds were recorded. The greatest increase was in the waterfowl, especially of the ruddy duck and canvasback.

Studies Methods of Stomach Analysis.---William Vogt, formerly of the National Association of Audubon Societies, spent January 4 in the food habits laboratory studying methods of stomach analysis before leaving for South America, where he will study guano deposits for the Republic of Peru.

Observe Wildlife Conditions in Florida.---F. M. Uhler spent the last half of December making a study of waterfowl feeding grounds and Florida sandhill crane breeding grounds in the southern half of Florida. A. A. Reimer, of the Division of Land Acquisition, and U. S. Game Management Agent J. V. Kelsey joined Mr. Uhler during the first week of these investigations and also in the examination of an upland game area, near Okeechobee, which the State has proposed for acquisition under the Federal-aid plan.

While returning to Washington, Mr. Uhler joined H. L. Blakey, of the Section of Wildlife Surveys, in a study of wildlife conditions in marshes near the mouth of the Combahee River and in the South Carolina Sand Hills Refuge near McBee, S. C.

New Appointment.---Effective January 3, W. W. Bailey was appointed game propagator to handle the propagation of quail at the Patuxent Research Refuge in connection with the program recently inaugurated under the Bankhead-Jones project to study bobwhite quail nutrition.

Studies Duck Sickness.---During September and early in October, Clarence A. Sooter spent several days observing duck sickness outbreaks at the Malheur Migratory Bird Refuge, Oreg., in an attempt to correlate the occurrence of this disease with environmental conditions, including the types of vegetation with which it is associated and the physical and chemical conditions of the water.

A careful study of the vegetation is being made by Mr. Sooter as a basis for further experimental work in relation to vegetation management practices on the refuge and in similar areas in the northwest.

Inspects Snowy Egret Project.--In December 1938, John J. Lynch visited an estate near Ocean Springs, Miss., where a well-considered attempt is being made to establish a colony of snowy egrets in a region where none are now known to breed. Mr. Lynch made recommendations regarding improvement of food supply for the group of birds being held over the winter and for improvements in cover and provision of nesting sites. The possibility of utilizing the abundant supply of artesian water for development of a small waterfowl area in this natural marsh was investigated.

Continue Goose Food Studies.--At the Delta Migratory Waterfowl Refuge, La., Mr. Lynch began, during the fall and early winter of 1938, a project for studying the quantitative and qualitative utilization of food plants by blue and snow geese. Quadrats were located in different types of marsh and are being studied at intervals to determine their gross production of utilizable food, its depletion through the feeding season, and its recovery during the following growing season.

To increase the knowledge of goose food habits as a basis for marsh management, Mr. Lynch supervised the collection from hunters of nearly 400 stomachs from all the species of geese wintering on the Gulf Coast.

Use Seaplanes for Census.--Four seaplanes from the Annapolis Naval base were used on January 17 for the yearly census of waterfowl populations in the Chesapeake Bay area. C. F. Smith, A. H. Trowbridge, and R. H. Gensch, in company with O. D. Steele, game management agent, made the survey. They covered most of the Chesapeake Bay north of and including the Potomac River. A general increase in the waterfowl population of this area from last year was noted, the numbers of birds observed consisting of 153,000 ducks, 2,100 geese, and 8,300 swans. This year the birds were scattered throughout the area in numerous small flocks rather than concentrated in large flocks. One of the highlights of the survey was the excellent cooperation and accommodations again extended by Commander Moore and his pilots of the Navy Department.

Prepare Mosquito Control Program.--During the week of January 13 to 20, Lawrence W. Saylor spent several days conferring with officials of the Bureau and various Government agencies at Dover, Del., on plans to continue the research studies being conducted at the Bombay Hook Migratory Waterfowl Refuge to coordinate mosquito control with wildlife conservation.

Collaborating Students in Washington.--On January 14, Chester F. Phelps from the Cooperative Wildlife Research Unit at Blacksburg, Va., who had been working in the Washington laboratory, was recalled to assume other duties in Virginia. Dwight G. Rivers, also of the Blacksburg Unit, arrived in Washington on the same day to continue the research work on wild turkey stomachs. Mr. Rivers will probably remain until July 1.

Luther L. Baumgartner from the Ohio Unit, Columbus, Ohio, is analyzing squirrel stomachs in the laboratory.

Inspects Sacramento Refuge.--After visiting the Sacramento Wildlife Refuge, Calif., on November 26 and 27, Johnson A. Neff wrote: "Utilization of the water areas on Sacramento refuge near Willows has been amazing on this, its first year of operation; the activity here is reminiscent of the years prior to 1933, when part of the old Spalding Ranch was an inviolate private sanctuary. The ducks and geese from the entire central Sacramento Valley have made the refuge their headquarters; the birds have learned to work back and forth from the State refuge near Gridley to the Sacramento refuge; a distance of nearly 20 miles."

On November 8 Mr. Neff with Assistant Entomologist Wilson studied the relationship of bird life to grasshopper abundance. Mr. Neff also conducted studies on the control of crows in the English walnut area where serious depredations were occurring.

Discusses Significance of Refuge Work.--On January 9 Dr. Clarence Cottam addressed the Society of Natural History at Wilmington, Del., on "The Refuge System as a Factor in Wildlife Conservation" and discussed the Bureau's other activities in the conservation of plant and animal life on the Delmarva Peninsula. The lecture was illustrated by lantern slides. In this talk he was assisted by Wesley F. Kubichek who also presented some motion pictures on the same subject.

Inspects Proposed Wildlife Area.--A. C. Martin spent November 29 and 30 inspecting the food resources of an 18,000-acre wooded tract near Nashville, Tenn. The area has been proposed as a haven for deer, turkey, quail, and other game, under the Federal Aid to Wildlife Restoration Act. According to Mr. Martin's observations the food and cover resources of the tract are well suited to support a large population of these species of game.

Attend Meetings.--Dr. Cottam attended the meeting of the American Association for the Advancement of Science and Associated Societies at Richmond, Va., from December 27 to 29. Problems in ecology, mosquito control, and wildlife conservation were discussed with numerous visiting scientists.

Messrs. Saylor and Gensch accompanied Dr. Cottam on this trip and made contacts with many visiting entomologists and foresters. Mr. Saylor also attended the meeting of the American Society of Plant Taxonomists and the Physiological Society in connection with studies of marsh ecology being pursued on the Delaware marshes.

Nutrition Studies Get Underway.--Ralph B. Nestler was transferred from the Bureau of Animal Industry to the Bureau of Biological Survey, effective December 1, as an associate biologist to do experimental work on the nutrition of bob-white quail. Financed by the Bankhead-Jones research fund, the project will be conducted in cooperation with the Bureau of Animal Industry.

The nutritional requirements of the species will be determined and will serve as a basis for scientific feeding of the birds in captivity as well as in providing a foundation for improving areas where the species is to be encouraged. Laboratory investigations will be conducted at the Poultry Nutri-



tion Laboratory of the Bureau of Animal Industry at the Beltsville Research Center. Propagation and experimental feeding of birds will be conducted at the Biological Survey's Patuxent Wildlife Research Refuge.

Correlates Canada Goose Production and Kill.--During the 1938 hunting season at and in the vicinity of the Bear River Refuge, Utah, C. S. Williams, through the cooperation of local sportsmen, was able to calculate accurately the total kill of Canada geese. The careful nesting study made in the spring by Mr. Williams and Marcus Nelson, of the Utah Cooperative Unit, indicates that the number of goslings surviving the brooding period was three times the total kill. With the number of adults and goslings totaling between 2,500 and 3,000, the kill does not appear to be excessive. A large proportion of the birds, however, left the refuge before December, and there is no satisfactory way of predicting their percentage of survival for another nesting season.

A collection of representative Canada goose gizzards was obtained from various parts of Utah during the 1938 hunting season. Field observations on the feeding habits of these birds are being continued as a partial basis for their management on the Bear River Refuge.

Works on Revising Botulism Film.--In November E. R. Kalmbach, of the Denver Food Habits laboratory, spent 10 days in the Bear River marshes taking several hundred more feet of motion pictures for a revision of the film on avian botulism. The new scenes present some of the modern aspects of the problem and the measures that are being undertaken to combat the malady.

Appraises Crow Damage.--From November 2 to December 23, Mr. Imler was in Oklahoma completing an appraisal of the damage done by crows to crops in that State. This project began in the fall of 1937 in cooperation with the Extension Service and the Oklahoma A & M College at Stillwater. The results of the 1937 studies will soon appear in the form of a BS Leaflet. The work just completed supplements the earlier project in that it is based on an appraisal of conditions in the eastern half of the State, an area in which crow damage is less pronounced.

### Distribution and Migration of Birds

Foreign Banding Stations Established.--A waterfowl banding station at San Jose de Guatemala, Guatemala, Central America, was recently established under the direction of L. A. Summerhayes, who for some time has been submitting reports on the waterfowl situation in his country. He probably will specialize in the banding of blue-winged teal.

Miss Winnie Valverde, Charcas, S. L. P., Mexico, has been issued bands for species of birds that migrate between the United States and Mexico. A report of her activities has not yet been received, but if she is successful in the establishment of a productive trapping station, some interesting results may be expected.

George C. Munro, Honolulu, T. H., is continuing his work with the petrels, shearwaters, and boobies in the Hawaiian Islands. He has just submitted a report for 5,000 newly banded individuals.

A schedule for 128 banded Laysan Island Albatross, on Midway Island, in the Pacific Ocean, was recently received from Fred C. Hadden.

William Vogt of the National Association of Audubon Societies, has been assigned duty with the Guano Administration in Peru and through co-operation with the Peruvian Government will band the various species of birds that are encountered in his studies.

Progress of Banding Work.--Since the first of the fiscal year about 250,000 banded birds, including 7 new species, have been reported to the Bureau.

Returns Received during Hunting Season.--From the opening day of the shooting season to January 1, more than 2,700 returns (mostly ducks) were received.

Interesting Returns from Banded Birds.--The following are returns of outstanding interest from banded birds, showing band number, place, and date of banding, and place and date of recovery:

Common tern:

B399685, Mass., Chatham, 6/24/34

35-522749, " Egg Is., 6/19/36

Columbia, Puerto Colombia, 11/22/38

Brazil, Igarape Mirim, Para, 11/21/38

Royal tern:

A541266, S.C., Charleston Co., 7/15/32

Cuba, Bahia Honda Bay, 11/19/38

Mallard:

420513, Sask., Davidson, 10/7/27

38-706270, D.C., Washington, 4/11/38

Minn., St. Paul, 11/1/38

Man., Se-Pe-Wisk Lake, 9/24/38

Blue-winged teal:

37-502344, La., Avery Is., 4/24/37

38-517369, Mich., Germfask, 8/24/38

39-500478, La., Avery Is., 10/8/38

Colombia, Magdalena, 9/14/38

Canal Zone, Rio Juan Diaz, 9/27/38

Colombia, Magdalena, 11/24/38

Coot:

38-657361, S. Dak., Columbia, 8/17/38

Pa., Middletown, 10/28/38

Flicker:

490801, Mich., Sault Ste. Marie, 6/18/27

Mich., Sault Ste. Marie, 11/15/38

Chimney swift:

A51362, Ill., Clayton, 9/21/29

Ill., Clayton, 10/?/38

Purple crackle:

316390, Pa., Paoli, 7/28/24

Pa., Upper Darby, 10/13/38

Vesper sparrow:

37-20452, Alta., Rosyth, 6/20/38

Mexico, Ecuandureo, Mich., 11/12/38

Robin:

A385978, Ohio, Toledo, 6/25/32

(Banded when young.)

Ohio, Toledo, 6/25/34 (with two young).

Found dead in Toledo 12/6/38.

First Report on Waterfowl Inventory.--In connection with the annual inventory of migratory waterfowl, F. C. Lincoln, and D. R. Gascoyne, of the Division of Game Management, covered the Potomac River from Washington to Nanjemoy Creek, Md., on January 17, in the airship Resolute, commanded by Captain Karl L. Lange. Weather conditions were good, and the observers reported the largest number of ducks seen on the Potomac River for several years, a particularly gratifying feature being the great increase in canvas-backs, although equally surprising was the total absence of redheads. In checking their observations Mr. Lincoln and Mr. Gascoyne found that on a total of more than 60,000 birds, they were less than 100 ducks apart in their tallies.

Further reports on the inventory that took place throughout the country on or about January 15 will appear in the next issue of THE SURVEY.

Report from Atlantic Flyway Biologist.--Harold S. Peters returned to his headquarters in Charleston, S. C., on December 17, after a successful survey of southern Georgia and Florida. Observations were made around Lake Okeechobee, the Cape Sable region, the Keys, and Fort Myers, where a flight was made to cover some good duck areas as well as to see some of the Survey's numerous island possessions. From there he went to St. Petersburg and the St. Marks Waterfowl Refuge. Mr. Peters has a tentative plan to cover the entire coastal area from Charleston to Miami and return by small plane early in January. He will assist in the waterfowl inventory and visit refuges.

Report from Mississippi Flyway Biologist.--C. E. Gillham is continuing investigations on the status of waterfowl in the lower Mississippi valley and has been working in close cooperation with Regional Director Roy Moore of Region 5. Mr. Gillham is also extending the investigations westward along the coast of Louisiana and of Texas, where a large concentration of redheads has been reported.

Report from Central Flyway Biologist.--During December Dr. George B. Saunders planned to conduct field work within 75 miles at Matamoros, Mexico, which would allow several trips to his field headquarters at Brownsville, Tex., for study and storage of specimens. In January the work will be done farther south between San Fernando and Tampico.

Report from Pacific Flyway Biologist.--During the month of December, Luther J. Goldman continued his waterfowl investigations in Sonora, Sinaloa, and Nayarit, Mexico. He reports geese, cranes, and ducks in good condition.

Inspects Recovery Records.--On December 13, 1938, Stirling Brackett, of the University of Wisconsin, visited the office to study the recovery records of banded herring gulls and blue-winged teal in connection with his investigations of certain blood parasites of these species.



Fur Resources

New Appointments.--Dr. John R. Loosli was appointed agent of the Bureau, effective December 16, in the Section of Fur Resources to conduct metabolism tests on fur animals under the direction of Dr. L. A. Maynard of the Laboratory of Animal Nutrition, Cornell University, Ithaca, N. Y. Dr. Loosli visited the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., in November to inspect the work that is being done there and to obtain first-hand information on equipment and fur-management methods. The Experiment Station shipped 17 minks to Cornell University for use in metabolism studies.

Effective December 1 Joseph Mihalek, Jr., was permanently appointed as keeper of the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y. Mr. Mihalek has worked at the station at irregular intervals since 1925, and from March 4, 1936, to May 16, 1938, held a part-time appointment by approval of the Secretary.

Attend Meetings.--Geo. S. Templeton, director, U. S. Rabbit Experiment Station, Fontana, Calif., and Charles E. Kellogg, of the Washington office, attended the meetings of the American Society of Animal Production, held in Chicago. On November 28 and 29 they attended the International Livestock Show.

While there Mr. Templeton addressed the Chicago Rabbit and Cavy Breeders Club at the Sherman Hotel. On December 5 he attended the meeting of the Committee on Standards for the American Rabbit and Cavy Breeders Association and assisted them in formulating standards for meat rabbits. He spoke on feeding principles that have been developed through experimental work at the rabbit station, and on December 8 he attended the Annual Midwest Wildlife Conference at the Southern Hotel in Columbus, Ohio.

Mr. Templeton spent 5 days in the Washington office discussing the progress of the work at the station. Later, accompanied by Frank G. Ashbrook, he visited the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., where the experimental work on fur animals was reviewed. In New York City, Mr. Templeton had an opportunity to visit several fur manufacturing and raw-fur dealer establishments. Mr. Ashbrook and Mr. Templeton also visited Dr. Robert K. Enders at Swarthmore College, Swarthmore, Pa., to discuss his experiments with minks. On December 16 Mr. Templeton inspected the Lederle Laboratories, Pearl River, N. Y., where 19,000 rabbit units are being maintained for the production of pneumonia serum. Mr. Templeton returned to Fontana, Calif., December 20.

Confers with Officials in Washington.--Dr. Herbert L. Dozier, director, U. S. Fur Animal Field Station, Cambridge, Md., visited the Washington office January 5 to 7 to discuss the progress of the experimental work at the station and the proposed investigations to be done next year. While in Washington he inspected the work being done at the National Agricultural Research Center, Beltsville, Md., with fur-animal fibers.

Expand Mink Research Project.--During December, 76 minks were received at Swarthmore College by Dr. Enders for instituting investigations along 9 specific lines this coming winter. Dr. Stabler, of the University of Pennsylvania Medical School, has determined in a cooperative study that these mink are remarkably free from protozoa parasites. The respiration test conducted by Dr. Laurence Irving, head of the Department of Zoology at Swarthmore College, indicated that minks are very aquatic, diving animals in their respiratory action. Dr. Irving and his students also conducted studies on the blood of several minks during December. Dr. Jacobs of the University of Pennsylvania is cooperating with Dr. Enders in a study of the specificity of the red blood cells of the fox, and Dr. Irving is working on the respiration-circulation relationships of the fox.

Deceased.--On Wednesday evening, December 21, 1938, Joseph S. Mihalek, Sr., an employee at the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., since 1924, died suddenly from a heart attack. Mr. Mihalek had not worked at the station since June 13, 1938, when he was taken seriously ill, and since September 11 had been on leave without pay.

Vitamin A Reserve Studied.--Fifty-nine experimental foxes were pelted by Charles F. Bassett, director, U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., this year, and are to be given detailed study by Dr. Thora M. Plitt, recently appointed by the Bureau to investigate fur-animal fibers. Mr. Bassett also sent the livers of these experimental foxes to The E. L. Patch Company, Research Laboratories, Boston, Mass., for assaying the vitamin A content under a cooperative arrangement with Dr. Arthur D. Holmes of the above company. This is the first time that as thorough and intensive an investigation has been undertaken. Autopsies were made of all foxes by Dr. Wm. H. Armstrong of the Section of Disease Control.

#### Disease Control

Selenium Poisoning Studies.--In a study of selenium poisoning in ducks, preliminary feeding tests have failed to produce any of the symptoms ascribed to this type of intoxication. Dr. E. R. Quortrup, of the Disease Research Laboratories, Bear River Migratory Bird Refuge, Utah, reports that all birds completing the test failed to show any harmful effects of the feeding of marsh plants suspected of carrying the toxic material. It may also be noted that apparently healthy ducks shot on the wing have shown on chemical analysis liberal quantities of selenium in certain tissues.

#### FEDERAL AID IN WILDLIFE RESTORATION

States Discuss A. A. A. Program.--Personnel of the Federal Aid Division held a conference in Washington, January 9-10, with representatives of the game departments of Iowa, Michigan, Missouri, North Carolina, Ohio, and Pennsylvania, to discuss the possibilities of further benefits to wildlife under the

payments now made to farmers through the Agricultural Conservation Program. The farm act provides benefit payments for soil-building practices, many of which can be made useful to wild birds and animals, if properly planned and executed on the farm. Erosion control, reforestation, green manure crops, the restriction of grazing and planting of wind-breaks and forest trees are some of the practices offering the most opportunities.

Representatives of the Agricultural Adjustment Administration attended the conference, explaining the operation of the Act and participating in the discussions. The Soil Conservation Service and the Forest Service were also represented.

Some thought was given to recommendations that might be submitted to the Agricultural Adjustment Administration for consideration as inclusions in future programs in order that they be more beneficial to wildlife.

Inspect Lands.--R. M. Rutherford spent 13 days in Pennsylvania during December and January inspecting lands proposed for acquisition under the Pittman-Robertson program by the State Game Department.

Virginia Studies Wild Turkey.--The Virginia Commission of Game and Inland Fisheries plans to use a portion of its Federal funds to study the distribution and factors influencing the abundance of wild turkeys in Virginia. This will supplement the work conducted at the Cooperative Wildlife Research Unit, Blacksburg, Va., since 1935.

The project contemplates a survey to determine the present distribution of the species and the influence of cover, hunting, disturbance of range, and other factors; check survival and movements of both native and liberated birds by the use of leg bands; study experimental liberations under different types and degrees of management; study the predation of nests, young, and adults; observe food habits; and record the life history of the wild turkey on films.

Dean S. T. Dana, of the School of Forestry and Conservation, University of Michigan, and affiliated with the Charles Lathrop Pack Forest Education Board, will act in an advisory capacity. The Board has granted a \$720 fellowship to further the study. Prof. H. M. Wight, also of the University of Michigan, will assist in the program; C. O. Handley, leader of the Virginia Cooperative Wildlife Research Unit, will act as supervisor; and The Virginia Polytechnic Institute will furnish laboratory space and other facilities. Henry S. Mosby and D. G. Rivers, graduate students, will act as leaders.

Addresses Ohio Conference.--Albert M. Day went to Columbus, Ohio, on December 7 to address the 4th Annual Midwest Wildlife Conference on "How the Pittman-Robertson Act Can Assist in Research on Farm Game Problems." He returned to Washington December 12 after inspecting a proposed Federal Aid project near Lake Erie and visiting some of the controlled pheasant hunting areas organized by the State Game Department.

Restock National Forests.--On December 8 the stocking of the Thomas Jefferson and George Washington National Forests and adjacent areas with deer was approved as a Pittman-Robertson Project of the Virginia Commission of Game



and Inland Fisheries. The U. S. Forest Service, the Michigan Conservation Department, and the Bureau of Biological Survey are cooperating with the Virginia Commission.

The purpose of the project is to reestablish deer in the mountainous sections of the State and to tie together herds already established by previous stocking programs. All areas in which releases are to be made have been closed to deer hunting and will remain so until the cooperators agree that the deer have increased sufficiently to warrant an open season. An effort is also being made to induce the Board of Supervisors in each of the several counties to pass ordinances making it unlawful to permit dogs to run at large. Where advisable, State game refuges have been, or will be, established to give additional protection. Game wardens of the Commission and a number of deputized employees of the national forests will make a special effort to prevent poaching of deer by either man or dogs. All deer liberated will be tagged.

Farm Game Problem Studied in Michigan.--The Michigan Conservation Department plans to use a portion of its Federal funds on a farm-game study to determine the practical coordination of game management and farming practice and whether the two are compatible. The study, approved January 6, will be conducted on the Rose Lake Wildlife Experiment Station, embracing typical Michigan farm land cultivated under the direction of a resident farm manager technically trained in agriculture.

Major consideration will be given the ring-necked pheasant, Hungarian partridge, and quail. Graduate students under the direct supervision of Farley F. Tubbs will be assigned to the specified phases of the study. The Michigan State College at East Lansing will cooperate with the Conservation Department on technical problems involving farm crops and soils.

18,000-Acre Project Approved.--The first land acquisition project under the Pittman-Robertson program to receive final approval was submitted by the Division of Game and Fish, Tennessee Department of Conservation, and approved by the Acting Chief of the Bureau on January 16.

This wildlife restoration unit is located in Cheatham County, approximately 16 miles west of Nashville, between the Cumberland and Harpeth Rivers, and embraces about 18,000 acres. About 6 months will be required to vest title in the State, and, on the basis of the present apportionment, several years to complete payment for the tracts.

In former years the area was considered one of the finest hunting places in central Tennessee. It now supports a good squirrel population. Deer and wild turkey were formerly abundant, but their numbers have been seriously depleted. Some quail, raccoon, opossums, and other species are also present.

The unit is predominantly cut-over woodland, abundantly supplied with water and has a good stand of food-producing plants. Through suitable management practices, the Division of Game and Fish plans to restore wildlife to its former abundance.

Plan Wildlife Resources Survey.--The Missouri Conservation Commission's request for Federal cooperation in a comprehensive survey of the wildlife resources of their State was approved on December 1. The State will be divided into five districts, and a game manager assigned to each to determine the factors limiting the production and utilization of wildlife in that area and to study the opportunities for applying wildlife-management practices.

Tests are to be conducted to determine the practical procedures that can be recommended for general use. Methods of securing the cooperation of property owners will also be studied. An effort will be made to determine the actual measurable economic value of wildlife to agriculture in Missouri.

The University of Missouri, U. S. Forest Service, U. S. Soil Conservation Service, Civilian Conservation Corps, State Park Board, and the Biological Survey are cooperating with the Conservation Department on this project.

Deer and Elk Survey Begins.--A deer and elk survey of Colorado, approved November 28, proposes to determine the population and define the limits of overloaded areas; ascertain food requirements of types of range; appraise permanent damage, and if such exists, its relation to ratio, of concentration on these areas; learn the relation of summer range to winter ranges, in volume, times of use, and movements of herds between the two; determine acreage required in a plan of permanent game management; and make some study of winter feeding, feed used, the relation of disease infections and parasite infestations to winter feed-ground concentrations, and the soundness of winter feeding programs.

The project will also study the conflict between this species and privately owned stock on public lands and will seek to produce the optimum returns obtainable through coordination and adjustment of all land uses.

The U. S. Forest Service, Colorado National Guard, Colorado Conservation Council, Colorado State College, Stockmen's Association, and the Biological Survey will cooperate with the Colorado Game and Fish Commission. Arthur H. Carhart will act as leader of the project, assisted by Mott R. Duncan, Lucas Dargan, Herbert S. Wallace, James M. Coutts, and William Nemanic.

Will Study Raccoon Management.--A study of raccoon management proposed by the Michigan Fish and Game Department as a part of the Pittman-Robertson program was approved on January 9. The study will be conducted at the Swan Creek Wildlife Experiment Station and will involve studies in causes of mortality, in breeding habits, range, population, food habits, economic relations, and management of the species.

Graduate students under the direction of Dr. Durward L. Allen will be assigned to specific phases of the problem. The Michigan State College at East Lansing and the University of Michigan at Ann Arbor will cooperate with the Michigan Conservation Department on the study.

To Place 3,000 Markers on Refuge Boundary.--The Minnesota Conservation Department will develop the Carlos Avery Refuge and Public Shooting Grounds, in the eastern part of the State, by constructing 14 miles of fence and posting 3,000 metal markers on the boundary of the refuge. With posters on the fence at intervals of not more than 50 feet, sportsmen can determine the limits of the sanctuary and avoid unintentional trespass.



Unique Pheasant Restoration Project Planned.--As the result of drought, changes in farming practices, and other factors, the breeding stock of ring-neck pheasants has become seriously depleted in many portions of Nebraska. In an attempt to improve the situation, the State Game, Forestation and Parks Commission submitted a unique restoration program, approved on December 15, that embodies a new method of acclimating the birds to the habitat in which they are to be liberated. Since the procedure is somewhat experimental in nature, the results of this project will be watched with a great deal of interest. Birds are to be restored only on lands under 5-year lease to the State and at least 1,200 acres in size. Covers will be improved, and all birds will be banded before they are liberated. Farmers, 4-H Clubs, local sportsmen's groups, and the Biological Survey are cooperating with the Commission on the project.

Improve Kickapoo Game Preserve.--The first Mississippi wildlife habitat development project under the Pittman-Robertson program was approved on December 13. The Mississippi Game Department designed the project to improve food and cover conditions for deer and turkeys within the Kickapoo game preserve. The improvements will also aid in controlling erosion on the area. If the plan proves successful, surplus game will be used in other parts of the State. Federal funds are being used for the initial development only, after which the State will continue the program on a maintenance basis.

To Reclaim Old Well.--An old well in the Harquahala Mountains, near Aguila, Ariz., will be reclaimed by the Arizona State Fish and Game Department, through the use of a portion of their Federal funds. Desert mule deer, desert bighorn sheep, Gambel's quail, mourning doves, white-winged doves, and other forms of desert wildlife are known to have used the water supply when the well and tank were in repair. Although the well has never been known to go dry, the mechanical fixtures have deteriorated in recent years and are no longer serviceable. The well will be cleaned, the tank repaired, and a small windmill installed. The Wayne Taylor Cattle Ranches occupy the range and have volunteered to cooperate. Mr. Taylor will construct a suitable foundation and tower on which to place the mill as part of his contribution to the project.

#### LAND ACQUISITION

Malheur Case Tried.--Bert J. G. Tousey has returned to the Denver office after spending October and November in Portland and Burns, Oreg., assisting with the preparation and trial of the United States vs. Otley case.

This case was brought in the U. S. District Court to quiet title to land within the Neal Survey line on the Malheur Migratory Bird Refuge, Oreg. Fifteen tracts of land were claimed by many defendants. A pre-trial was held in Portland on November 4 and 5, at which time about 90 exhibits were introduced as evidence.

On the first 2 days of the trial, November 15 and 16, the Court inspected the tracts involved. An unusual procedure was followed in that attorneys representing both sides made opening statements relative to each tract on the ground in the presence of Judge Fee and the court reporter. Oral testimony was taken in Burns during the remaining days of the trial.

Judge Gustav Iverson represented the Attorney General; Mason Dillard, the United States District Attorney's office in Portland; and the Solicitor's Office of the Department of Agriculture was represented by Benjamin Catchings, Hugh L. Biggs, W. F. Staley, and John T. Casey.

### WILDLIFE REFUGES

Big-Game Animals in Good Condition at Wichita.--The big-game animals and the Texas longhorns at the Wichita Mountains Wildlife Refuge are all reported to be in good condition. The longhorns steers are said to be rolling in fat.

Even the antelope received from New Mexico in March 1938 appear to be keen and alert and have apparently become acclimated to their new location. Twelve animals were received, and 6 fawns were born after their arrival at the refuge, but losses believed to have been caused by predators reduced the herd to 10. The antelope suffered no apparent ill effects during the fall tick season and hopes are entertained that they have become well established on the refuge.

The following donations of big-game animals have been made to parks and zoos; A buffalo bull and three cows to the Brownwood State Park, Tex.; a buffalo bull and two elk to the municipal zoo at Springfield, Mo.; two elk cows to the Kansas Forest, Game, and Fish Department for placement in a State park at Pratt, Kans.; and a pair of long yearling buffalo to the city zoo at Manhattan, Kans.

Deer are plentiful in all but the northern sections of the refuge, where heavy grazing has curtailed food supplies during the past year. Several deer were struck and killed by automobiles during the fall, and others were found maimed or killed after running into fences or other obstructions when frightened. Many visitors enjoy watching the deer on the headquarters lawn, where from 15 to 30 of the animals come each morning and evening for a handout of grain. Among them is a large buck that has become exceptionally gentle and is among the first to arrive and the last to leave.

Deer, wild turkeys, skunks, raccoons, squirrels, and a variety of wild birds feed daily at the superintendent's residence. This month a half-grown opossum joined the group, nonchalantly climbing to a window sill and gratefully accepting handouts from the kitchen.

Occasionally a glimpse has been obtained of some elk that escaped from the interior pasture a few years ago. Among them is a large bull who this year bore a massive rack of antlers.

Forage has remained abundant for the big-game animals and the longhorns, but the mast crop failure rendered food conditions below par for other forms of wildlife.

Wichita Herd Joins Hollywood "Cast".--Hollywood motion picture companies "discovered" the Wichita buffalo herd and, within 2 weeks, the animals had "performed" for two major productions, the companies having sent camera crews and "stand-ins" for the stars, according to Superintendent George E. Mushbach, of the Wichita Mountains Wildlife Refuge, Okla. A Warner Brothers' camera crew set up its technicolor equipment on a truck on a knoll in the buffalo pasture on October 31 and obtained favorable "shots" of 300 animals. The scenes will be used in a feature picture "Dodge City" to depict buffalo on the plains in the early days of Kansas. The herd was driven to location and then coaxed into position with liberal rations of cottonseed cake.

From December 3 to December 9, the Paramount Company obtained a series of pictures for its "Union Pacific" film, which will probably be released next September. The Company built some 600 feet of "Union Pacific" track in the roadway of the pasture; erected a few telephone poles alongside; placed an old hand-car on the wooden rails; and shot scenes of the buffalo engulfing the hero and heroine as they were marooned on the car. Officials of both companies are said to be pleased with the results and believed that they had obtained some spectacular and out-of-the-ordinary wildlife scenes.

Stock Lakes with Game.--The Oklahoma Game and Fish Commission is co-operating to the utmost in stocking and restocking lakes in the Wichita Mountains Wildlife Refuge, Okla., with game fish. During December the Commission planted 153,000 fingerlings in the refuge lakes, and 40,000 more were to be planted within a few days. These include goggle-eyes, blue-gills, crappie, channel catfish, and strawberry bream. The 149,000 previously received from the U. S. Bureau of Fisheries hatchery at Tishomingo, Okla., brought the total planted during the fall and early winter to 342,000. The cooperation of these agencies is greatly appreciated.

Rain Fills Lakes.--After some 7 months without a heavy rain, 2.85 inches of precipitation on January 7 and 8 filled 14 lakes in the southwest section of the Wichita Mountains Wildlife Refuge. Runoff was less in the northern and eastern sections, and lakes there are still below spillway levels.

Fires Controlled at Refuge Borders.--Prompt response by Civilian Conservation Corps and refuge personnel twice prevented grass-and-brush fires from entering the Wichita Mountains Wildlife Refuge during December and January. On December 18, a 100-acre fire off the south boundary was controlled after the front burned within a few hundred feet of the fence, while on January 7 a blaze that scorched 55 acres of private property south of the refuge burned within 20 feet of the refuge property.

Thousands Visit Sullys Hill.--During the calendar year 1938, 22,744 persons with 4,476 cars visited Sullys Hill Game Preserve, N. Dak.



Immunize Longhorns.--To protect the herd of Texas longhorns at the Wichita Mountains Wildlife Refuge from possible infection from hemorrhagic septicemia, a livestock malady prevalent in the surrounding area, members of the Wichita staff administered immunization bacterin this month to almost a hundred animals of the longhorn herd. Since this disease apparently attacks principally the run-down and weaker animals, treatment was given only to the cows, calves, and younger steers and bulls.

Checkup Discourages Poachers.--Poachers, who hunted at night with the aid of flashlights, were discouraged from killing deer and wild turkeys by members of the Wichita Mountains Wildlife Refuge staff, who with State game law enforcement officers' cooperation, kept several all-night vigils at the refuge entrances during the holiday season. All out-going cars were halted, and the occupants questioned. While none was "caught in the act," Superintendent George E. Mushbach believes that the irregular checkups had the desired effect, and several potential poachers were doubtless restrained.

Refuge Popular.--Counting some 55,000 persons who entered the Wichita Refuge for the annual Easter Sunrise Services and pageant, more than 400,000 people passed through the 5 refuge gateways during 1938. Mechanical devices have been installed to count the cars at each of the entrances.

Storm Drives Antelope off Refuge.--When 18 inches of snow fell on the Hart Mountain Antelope Refuge, Oreg., during a heavy storm last October, all but 500 antelope were forced off the refuge in an unusual migration. Counts made in December, however, showed that some of the migrating animals had returned. The freezing of water areas throughout the surrounding sections forced them to use the living streams and springs of Hart Mountain. The count showed that 969 antelope were on the refuge in bands from 34 to 419 animals.

Counts and observations on mule deer were made from November 15 to December 9, when practically the entire deer population of the locality was on Hart Mountain and immediately adjacent lands. Observers counted 1,341 deer, and it is believed that approximately two-thirds of the deer frequenting the area were seen, an estimated total of 2,000. The weather during this period was moderately cold with no storms. The lakes and still waters were frozen, and all game was forced to use the living streams and springs to obtain water. Grass had previously made a splendid growth, and an important fact was noted in the preference of the animals for green grass, particularly broncho grass (Bromus tectorum) over browse and other forage, all of which is abundant.

Waterfowl Use Bison Range.--Forage is abundant at the National Bison Range, Mont., and the big-game animals, therefore, are in excellent condition. As usual, many pheasants made their headquarters on this area during the local hunting season, and many have remained. Large numbers of ducks and geese rested on Mission Creek within the range during the favorable weather in the fall, but few have remained there over the winter. In other wintering areas, however, a noticeable increase of migratory waterfowl was noted during the hunting season. Geese were particularly more numerous than they have been in recent years.



The establishment of migratory waterfowl refuges in the region is doubtless causing the increases noted. Hungarian partridges and sharp-tailed grouse have been seen in about their usual numbers, while blue grouse are observed occasionally.

Antelope Migrate to Winter Range.--Antelope using the Charles Sheldon Antelope Refuge and Range, Nev., left their summer range about the middle of October, just before the first snowstorm, and went to their winter range on what is known as Big Spring Table in the northeastern part of the Charles Sheldon Range. They were seen here on October 17 in estimated numbers varying from 3,000 to 5,000 animals on about 6 square miles. The animals remained on their winter range as long as they could obtain snow for drinking purposes. By the end of November they began to return to their summer range, and by the end of December they were scattered over that area in bands of from 50 to 500 head. With an abundance of feed and water this year, the antelope are in fine condition and, as there has been no livestock grazing on their winter range, it is believed that they will have ample feed during the winter.

Mule deer are increasing in numbers on the refuge and are becoming quite tame. They show little fear while patrolling parties are passing them. The herd has numerous fine bucks. The deer do not migrate to winter range as do the antelope; thus it will be difficult for them to find open water during cold weather when waters are frozen and snow is not available.

Control Elk Depredations.--The construction of a woven-wire fence along the east side of the Jackson-Moran Highway closing a 3-mile gap in the fence at the Elk Refuge, Wyo., was nearing completion on December 31. Fencing had been delayed pending purchase of a tract of land in the locality. This improvement is important in controlling the elk that gather on the refuge. In years past, when the snow on the refuge reached a depth that compelled the animals to paw through it to reach feed, many of the elk would leave and go to private ranches to the south and west where they would forage on haystacks. This condition will probably be remedied with the completion of the fence.

At the end of December the elk were widely scattered over the refuge area with many ranging far back onto the Sheep Creek and Flat Creek foothills. Almer P. Nelson, in charge of the refuge, estimates that 7,000 elk are within the refuge area or in the foothills, while State Game Warden Fred Deyo believes that there are more.

During the hunting season, not as many elk were killed from the Jackson Hole herd in the fall of 1938 as in the previous year. The State Game Department's records showed 2,099 elk killed and checked through their three checking stations, but this does not include animals taken by local hunters, which were unrecorded.

Enroute to China, Visits Elk Refuge.--On the evening of November 29, Mr. and Mrs. Ben B. Anthony, of Canton, China, visited the Elk Refuge and were much impressed by seeing so many elk on the area. Mr. Anthony has represented an American oil company in China for 20 years. He had been hunting elk in Idaho, under a special permit, but succeeded in securing only a spike bull. He obtained the head of a bull elk, with six-point antler, that had died on the refuge, and plans to place the head in the University of Canton, with an inscription attached stating that it is from the Elk Refuge, administered by the Biological Survey, at Jackson, Wyo.

Canada Geese Stop on Blackbeard Island.--During the first week of December, 12 Canada geese remained for 3 days on North Pond on the Blackbeard Island Refuge, Ga., Patrolman Oscar Goodwin reports. At the same time, from 10,000 to 15,000 ducks were concentrated here, and about 20,000 on Front Beach.

Fish Planted on Refuge.--Archie V. Hull, refuge manager of the Red Rock Lakes Migratory Waterfowl Refuge, Mont., reports that 30,000 native fish fry were obtained from the Montana State Game Department in October and planted in the three main streams on the refuge.

Speaks at Wildlife Meetings.--Roy N. Bach, biologist, stationed at Bismarck, N. Dak., attended the Cass County Wildlife Association Meeting at Fargo, N. Dak., on December 8. He spoke on the establishment and development of the North Dakota easement refuges and presented films showing their development and the wildlife thereon.

On the afternoon of December 9, Mr. Bach presented North Dakota wildlife films and spoke briefly at a regular meeting of the Zoology Club at the Agricultural College at Fargo. Great interest in the Bureau's wildlife work was expressed by those in attendance at both meetings.

Visit Southern Refuges.--W. F. Kubichek, chief of the Section of Habitat Improvement, and Richard E. Griffith, biologist, returned December 18 from an inspection of the South Carolina Sandhills Wildlife Refuge and the Piedmont Wildlife Refuge, Ga.; the new addition to the St. Marks Migratory Bird Refuge, Fla.; Nottoway Wildlife Refuge, Miss.; Wheeler Migratory Waterfowl Refuge, Ala.; and Kentucky Woodlands Wildlife Refuge, Ky. They made the trip primarily to draw up biological development plans for these refuges.

Hunters Get Good Bag Despite Weather.--Although cold weather permitted only 3 days of good hunting on the portion of the Red Rock Lakes Migratory Waterfowl Refuge, Mont., open to shooting, the average kill of ducks for each hunter was higher than during any previous year. Archie V. Hull, refuge manager, reports that in 123 man-days of hunting, 974 ducks and 6 geese, or an average of 8 birds a hunter, were taken.

Hunting Season Successful at Bear River.--During the hunting season ending November 28, 3,037 hunters registered at the checking station on the Bear River Migratory Bird Refuge, Utah, Superintendent Vanez T. Wilson reports. The total kill of ducks and geese was 13,598, or an average of about 4 1/2 birds a hunter, the largest kill since the refuge was placed under Survey administration in 1932. This is explained by the fact that weather conditions were ideal during the entire open season and that there were more ducks and Canada geese on the refuge this fall than in the past 10 years.

Return From Inspection Trip.--Frank Earnshaw returned December 3 from a week's inspection of the Mattamuskeet and Pea Island Refuges, N.C., and Back Bay Refuge, Va. While at Mattamuskeet, he conferred with refuge and State personnel regarding the operation of the hunting area on that refuge.

Ducks Spend Part of Winter at Lake Bowdoin.--According to Refuge Manager B. M. Hazeltine, about 1,000 mallards remained on the Lake Bowdoin Migratory Waterfowl Refuge, Mont., until December 27, when extremely cold weather forced them to leave. Mr. Hazeltine attributes the unusually long stay of these birds to the exceptionally mild weather in that section of the country this fall and early winter, and to the undercurrent flow of spring water from Black Creek, which enabled them to keep a small water area open even though the rest of the lake froze to a depth of 8 or 10 inches.

Antelope and Upland Game Birds Increase.--The small herd of antelope on the Lake Bowdoin Migratory Waterfowl Refuge, Mont., which numbered only 7 in 1935, has increased to 17, Mr. Hazeltine reports. Range conditions are better than for many years past.

Chinese pheasants and Hungarian partridges have also increased in numbers. Several bird shelters recently constructed on the refuge, and kept supplied with grain during severe winter weather, attracted many of these birds. Though no sage hens inhabited the refuge a few years ago, they are quite common this year.

Ducks and Geese Plentiful on Tule Lake.--About 140,000 geese and 400,000 ducks were on the Tule Lake Migratory Waterfowl Refuge, Calif., during the first days of the hunting season, Refuge Manager C. G. Fairchild reports. These numbers include 6 species of geese and 15 of ducks. During the first 17 days of the hunting season, 13,476 birds were taken by 4,194 hunters. White-fronted geese were the principal species shot, followed by pintail ducks, mallards, shovellers, and redheads.

Predators and Prey Live Side by Side.--Several unusual nesting records were established this year on the Bombay Hook Migratory Waterfowl Refuge, Del., according to Refuge Manager John F. Herholdt. The nests of 17 pairs of shoveller ducks were observed on the salt marshes of the refuge, which is extremely unusual since the shoveller is entirely a fresh-water duck. Eight broods of this species were seen last year. Thirty-nine willet nests were also found in the salt marshes, establishing a new nesting record for the State. One brood of coots was raised on the refuge, the southernmost nesting record of this species on the east coast.

"Duck nests and nests of birds of prey often were found in close proximity, apparently in perfect harmony", Mr. Herholdt said. "For example, the nest of a black duck was found about 30 feet from that of a marsh hawk; a shoveller's nest, containing 11 eggs, quite fresh, was 12 feet from that of a short-eared owl with eggs and young, the oldest of which was about 3 weeks. More important to the farmers and game breeders was still another case: A red-tailed hawk's nest containing one young and two infertile eggs was found in a tall gum tree on a small grassy island. In the immediate vicinity were 3 broods of black ducks, from 2 to 10 days old, and two unhatched nests containing 9 and 11 eggs."

Scoters Concentrate Off Bulls Island Beach.--On November 21, Andrew H. DuPre, refuge manager of the Cape Romain Migratory Bird Refuge, S. C., saw about 8,000 American and surf scoters in the sea off Bulls Island Beach.



Successful Nesting Season Reported on Red Rock Lakes Refuge.--Although only about the usual number of ducks (between 7,000 and 10,000) were produced this year on the Red Rock Lakes Migratory Waterfowl Refuge, Mont., more Canada geese nested there this year than in any year since the establishment of the refuge, Refuge Manager Archie V. Hull advises. He attributes the number of Canada geese nesting on the area to the fact that through the elimination of cutting and grazing on many of the nesting areas, much better cover has resulted. For the first time since the establishment of the refuge, the American merganser nested this summer, raising the total number of waterfowl known to nest on the refuge to 13.

Honored by Audubon Society.--Philip A. Dumont, refuge manager of the Sand Lake Migratory Waterfowl Refuge, S. Dak., has recently been elected to the Advisory Board of the National Association of Audubon Societies. He was named the South Dakota representative to succeed Prof. Austin P. Larrabee, of Yankton College. Representatives from each State are chosen to serve as local ornithological consultants on articles submitted for publication in "Bird-Lore," the official journal of the Association, and as advisers on general conservation policies as they apply to their respective States.

#### CONSTRUCTION AND C.C.C. OPERATIONS

Visits Washington Office.--Millard I. Frost, regional CCC inspector with headquarters in Atlanta, spent December 15 and 16 in the Washington office conferring on CCC matters in his territory.

Washington Office Personnel Changes.--Frances F. Ginsberg, who has been in the division in a stenographic capacity since August 16, 1937, was transferred to the Division of Wildlife Refuges on January 16. She was replaced by Henrietta Gross. Raymond T. Farrelly, assistant architectural engineer, who had been on detail at the Patuxent Research Center in Maryland, has returned to the Washington office.

Field Personnel Changes.--C. A. J. English, camp superintendent at Savannah River Camp BF-1, S.C., is acting superintendent at Back Bay Camp BF-1, Va., replacing Neil E. MacDougall. E. S. Jaycocks is acting superintendent at the Savannah camp during Mr. English's absence.

Rae E. Kneeshaw has replaced Walter A. Schultz as camp superintendent at Bombay Hook Camp BF-1, Del. Mr. Kneeshaw came to Bombay Hook from Tamarac Camp BF-2, Minn.

CCC Boys Find Missing Deer Hunter.--A deer hunter who had been missing for 22 hours just northeast of the Tamarac Refuge was found by a group of 138 boys from Tamarac Camp BF-2, Minn., who were called out to look for him.

CCC Inspectors Confer.--A conference of all regional CCC inspectors was held in Washington on January 4 to 7. O. W. Teckemeyer, of Boston; Millard I. Frost, of Atlanta; Arthur E. Miller, of Omaha; Edwin H. Hackenberg, of New Orleans; and Wilfred J. Gregson, of Portland, attended the meeting. Round table discussions were held on the many problems relating to the operation of the Bureau's 32 CCC camps. On January 6, S. M. Lauderdale, safety engineer of the Civilian Conservation Corps, gave a talk in which he stressed the reasons behind and the objectives of the safety program being carried on throughout the Corps.

900-acre Blaze at White River.--Fifty boys from Camp EF-1, Ark., recently spent a night on the firelines before they succeeded in putting out a 900-acre blaze on the White River Refuge. Fortunately there was little wind, and the CCC enrollees, with spades and shovels, threw up an earth trench to keep the fire from spreading.

Inspects New Buildings at Saratoga.--E. P. McDermott visited the U. S. Fur Animal Experiment Station, Saratoga Springs, N.Y., on December 12 and 13 to inspect the residence and utility buildings under construction on that area.

## GAME MANAGEMENT

### Game Management Agents

Geese Plentiful in Idaho.--U. S. Game Management Agent George M. Riddick, Boise, Idaho, reports that more geese were seen in Idaho during the past fall than have occurred there for many years. Though plentiful throughout the State, the center of concentration seemed to be near the Utah-Nevada line. According to Mr. Riddick, the concentrations apparently were evenly divided between Hutchins and Canada geese. One American white-fronted goose was checked in a hunter's game bag, and hunters reported killing two others on the American Falls Reservoir.

Snake River a Waterfowl Haven.--During the latter part of November according to a report from Mr. Riddick, after many of the lakes and streams had frozen over, Snake River, Idaho, furnished a resting place for thousands of ducks of various species, the goldeneye being predominant.

### Law Enforcement

Bait Hunting Brings Fines.--Four State wardens, two from Alabama and two from Mississippi, together with a Federal agent, apprehended six residents of Alabama hunting mourning doves by means of bait in George County, Miss., on January 7. The hunters were arraigned in State Court in Mississippi and fined \$10 each and costs, a total of \$93.90.

Convict 39 Violators.---Thirteen Migratory Bird Treaty Act violators were fined in Federal Court at Opelousas, La., on January 3 as follows: Hunting ducks in close season, \$25 each (3); hunting doves in close season, \$25 each (5); exceeding daily limit on doves, \$15, (1); hunting with gun capable of holding over three shells, \$25 each (2) and \$15 each (2). One hunter had no Migratory Bird Hunting Stamp and was fined \$10.

Twenty-six other Migratory Bird Treaty Act cases were disposed of in Federal Court at New Orleans, on January 3 and 9, as follows: Hunting ducks from motorboat, \$25 each (22); hunting ducks in close season, 60 days each in jail, (2), suspended and placed on probation for 5 years; no plug in gun, \$10, (1); possessing live buntings and other birds, suspended sentence and placed on probation for 5 years (1). One gunner hunting with a borrowed stamp was fined \$10.

Man Fined; Ducks Given to Needy.---Apprehended by a Federal agent and a State game warden on Oyster Bayou, in Chambers County, Tex., killing ducks in excess of the daily bag limit, the offender, when arraigned in State Court on December 17, entered a plea of guilty and paid a fine of \$25 and costs of \$11. Fourteen seized ducks were given to charity.

Killed Robins.---A State conservation agent and a United States deputy game warden while patrolling in Evangeline Parish, met a New Year's day hunter with 48 dead robins. He was arraigned in Federal Court at Opelousas, La., on January 3 and fined \$15.

Interstate Shipper Fined, Jailed.---A fine of \$500 and 90 days in jail was the punishment meted out in Federal court at Santa Fe, N. Mex., when a resident of Castillo pleaded guilty to a charge of shipping two beaver hides from New Mexico contrary to State law and the Lacey Act.

Caught with 60 Ducks.---Three residents of Houston, Tex., were found by a Texas game warden and two Federal game agents in Brazoria County, on December 22, killing ducks from a motorboat and in possession of 60 dead birds. The men were immediately taken to State Court where they were fined \$100 each and costs, totalling \$333.

Used Live Decoys.---A hunter in Mansura, La., charged with hunting wild ducks by means of live decoys, entered a plea of guilty in Federal Court at Alexandria, La., on December 5. Judge Benjamin Dawkins sentenced him to 60 days in jail.

Hunted Out of Season.---Pleading guilty in Federal Court at New Orleans, La., to possessing ducks in close season and in excess of the daily limit, a resident of Port Sulphur was sentenced by Judge Wayne G. Borah to 10 days in jail on each count, the sentences to run concurrently.

Youth Sentenced to Study.---An 18-year-old hunter from Florence, Oreg., who killed two wild ducks on January 6, was arraigned in State Court, and sentenced to study game and non-game birds and later to prepare and give a talk to the local high school children on the subject of game birds.



Baiting Doves Brings Fines.--Three hunters found by Federal officers and State wardens hunting mourning doves by means of bait in Baldwin County, Ala., were arraigned before a justice of the peace on January 5. Pleading guilty, two were fined \$20 each, the other \$10. The costs in each case were \$4.

Duck Sellers Caught.--The residents of Vinton, La., who were found by a State agent offering to sell 10 ducks and 1 goose on December 3, furnished bond for appearance in Federal Court.

Refuge Trappers Sentenced.--Pleading guilty to trapping fur animals on an area of the Upper Mississippi River Wildlife and Fish Refuge in Iowa not open to trapping, a resident of Lansing, Iowa, was sentenced to 90 days in jail when arraigned in Federal Court on December 8. The sentence was suspended, and the trapper placed on probation for one year.

Two persons, one charged with carrying firearms on the White River Refuge and the other with unlawfully trapping there, were recently arraigned in Federal Court in Arkansas and placed on probation for 1 year and 2 years, respectively.

New Yorkers Fined.--Four persons from Rochester, N. Y., found by a State game protector and a Federal deputy hunting waterfowl during October by means of bait, were successfully prosecuted in State Court. Two were fined \$25 each and costs, and two \$10 each and costs.

Hunt After Hours.--Three men apprehended last October 28 in Wabasha County, Minn., by a reservation ranger and under refuge manager, for hunting waterfowl after 4 p.m., were taken into State court and fined \$10 each and costs of \$4.50 each. The ranger also caught a city policeman hunting with an unplugged gun on October 9, and in cooperation with the State game warden this hunter was arraigned in State Court, paying a \$25 fine.

Two persons hunting after 4 p.m., in Jackson County, Iowa, on October 29 were apprehended by a reservation ranger and deputy State warden and fined \$15 each and costs in State court. Their shotguns were also confiscated.

Fined \$150 Each.--Three residents of Pennsylvania apprehended November 6 on the Susquehanna Flats, Md., by a Federal deputy game management agent and a State game warden entered pleas of guilty before a justice of the peace to hunting wild ducks from a motorboat, in close season, and on Sunday. They were fined \$150 each.

Three States Join Forces.--Pleading guilty in Federal Court at Little Rock, Ark., to selling wild ducks contrary to the Migratory Bird Treaty Act, three men were sentenced to jail and fined on November 11, as follows: 60 days and \$50 (1); 30 days and \$25 (1); 10 days and \$10 (1). These cases are from the group involving Federal and State game law offenses and resulting from undercover investigations by Biological Survey agents in the tri-state area of Tennessee, Arkansas, and Mississippi. All three State game departments, the Tri-State Game and Fish Association, and the American Wildlife Institute cooperated with the Survey.

Other cases in the group were previously closed as follows: In Federal court, fines in 29 cases aggregated \$1,353, and in one other case the offender was sentenced to a jail term of 40 days. Jail sentences were also imposed in four cases in which fines were assessed, 60 days (1), 30 days (2), and 10 days (1). In State courts, fines aggregating \$1,195 were assessed in 24 cases, one defendant placed on probation, and one found not guilty.

Four Fined in Massachusetts.---Cases obtained by Federal and State officers in Massachusetts during November were disposed of in State Court as follows: Unplugged gun, \$30 (1); hunting after hours, \$40 (1); hunting over live decoys, \$50 (2).

Purchased Ducks.---A Federal agent obtained evidence regarding the purchase of six wild ducks by a bartender at Willows, Calif., on November 12. In cooperation with a State game warden the offender was taken to State Court and fined \$75.

Exceeded Bag Limit.---Six persons apprehended during October by State and Federal officers for killing wild ducks in excess of the daily bag limit were prosecuted in California State Court with the following results: \$30 or 15 days (1); \$35 (1); \$25 and a suspended jail sentence of 10 days each (4). The 63 seized ducks were donated to charity.

Fur Dealer, Buyer Fined.---Indicted for conspiracy to violate the Lacey Act, a fur dealer of St. Paul, Minn., and his buyer appeared in Federal Court at Superior, Wis., during the September term and entered pleas of guilty. The dealer was fined \$200, and the buyer \$5. Charged with shipping beaver and other hides illegally obtained, the buyer was also fined \$100.

Hunted From Motorboat.---Apprehended by State wardens and a Federal agent in San Diego County, Calif., on November 13, a hunter charged with shooting at coot and ducks from a motorboat was fined \$50 when arraigned in State court.

Had 16 Ducks Over Limit.---A hunter from Pocatello, Idaho, was found by Federal agents with 16 ducks over the daily limit. In State Court at American Falls on November 14, the violator pleaded guilty and was fined \$75 and costs.

Sixteen Californians Guilty.---Sixteen Migratory Bird Treaty Act cases, involving individuals apprehended this season, were closed in Federal court at Sacramento, Calif., November 29 and 30, and December 3, as follows: Hunting doves before 7 a.m., \$20 (1), \$50 (1); hunting doves in close season, \$50 (3); hunting with unplugged gun \$20 (1), \$25 (1); baiting waterfowl \$20 (1); selling ducks \$50 (2), \$100 (2), \$300 (1); 3 months jail (2), 4 months (1).

Close-season Hunters Fined.---Two close-season duck hunters in Illinois were taken before a justice of the peace by two State wardens and a Federal deputy game warden on November 30 and fined \$25 each and costs.

Non-resident Hunter Apprehended.---On information obtained by Federal and State officers, a resident of Ohio, who hunted in Michigan without a non-resident license, was turned over to Michigan Conservation officers, prosecuted, and fined \$100.

Fined \$200 for Shipping Pelts.--A fur dealer of Oshkosh pleaded guilty in a Wisconsin State Court on December 2 to illegally shipping 45 beaver pelts to New York and was fined \$200. The skins have been returned to the State game department. United States game management agents in New York and Wisconsin obtained the evidence.

Duck Shooting Expensive.--On evidence obtained by a deputy United States game warden, two residents of Sparta, Wis., found killing 6 wood ducks on October 14 and taken to State Court by a State game warden, were fined \$80 each and costs of \$15 each. Two shotguns were also confiscated by the Court.

Hunted After Hours.--For hunting ducks after 4 p.m. in Jackson County, Iowa, on October 2, a hunter apprehended by a junior reservation ranger and a State game warden was fined \$15 and costs in State court. The hunter's gun was confiscated. Another person hunting after 4 p.m. in the same county on November 16 paid a fine of \$50 and costs.

Killed Too Many Ruddy Ducks.--Among the cases closed in Federal Court in California last December were four involving the killing of ruddy ducks in excess of the daily limit. Each offender was fined \$10.

Pays Fine, License Revoked.--A hunter killing ducks in close season in Fond du Lac County, Wis., on December 26, was apprehended by a State conservation warden and a Federal agent. When arraigned in State Court, he was fined \$50 and costs of \$4.95. The gunner's license was revoked for one year and his shotgun confiscated.

Fines Total \$833.--Twenty-three offenders were successfully prosecuted in the Colorado State Court during October and November, Federal officers report. Fines and costs totaled \$833.80, and one defendant was committed to jail for 15 days.

Used Feed as Bait.--A fine of \$25 each was assessed against five residents of Carlton, Oreg., who pleaded guilty in Federal Court at Portland on December 8 to the charge of killing wild ducks by aid of feed.

Had Meadowlarks.--A resident of Fulton, Mo., who possessed three meadowlarks, was apprehended on December 4 by a State wildlife conservation agent, a Federal deputy game warden, and a highway trooper. He was fined \$75 and costs of \$10.35 when taken into State court.

Two other Missouri residents, found in Benton County November 27 hunting ducks with unplugged guns and with the aid of live decoys and bait, were fined \$100 and \$50 each and costs in State Court.

Texas Hunters Fined.--Three residents of Corpus Christi, Tex., one charged with killing and the others with possessing a sandhill crane, were taken into State Court by a game management agent on November 28. One was fined \$25, the others \$10 each and costs totalling \$33.



Two other Texans, arraigned in State Court on the same day and charged with killing four curlews and mourning doves in close season, were fined \$50 each and costs of \$25.

A hunter from Austwell, Tex., arraigned on November 29, reported by a State game warden for operating a shooting preserve without license and for using bait, was fined \$100 and costs of \$11.

A Houston resident was fined \$25 and \$11 costs on November 30 for killing three redhead ducks in excess of the bag limit.

Arrested One Year Later.-- As the result of a lead furnished in 1937 by a United States deputy game warden at Chicago, Ill., a Wisconsin conservation warden was able in 1938 to apprehend three hunters taking deer in close season. Each was fined \$50 and costs of \$4.85 when taken into State Court in Wisconsin.

Carolina Wardens Arrest Twelve Men.--Five hunters were apprehended in Richmond County, N. C., by State wardens on November 18 for killing and possessing wood ducks, two in the same county on November 19 for hunting after 4 p.m. and shooting at wood ducks, and four in Montgomery County on November 24 for hunting and killing waterfowl from motorboats. A resident of Hyde County was apprehended on November 15 for killing geese after 4 p.m. Following the filing of complaints by a Federal agent the men were taken before United States Commissioners and required to furnish bond of from \$100 to \$500 each for appearance at the March term of Federal Court.

Arrest 23 Men.--Twenty-three persons were arrested in Louisiana on December 11, for hunting wild ducks from motorboats. The men will be tried in Federal court.

Close-Season Hunters Jailed.--On evidence obtained by a Federal officer and State wardens, three men were successfully prosecuted in State court in Minnesota during November and December for hunting and possessing deer in the close season. One was fined \$33, and the others sentenced to serve 40 days each in jail.

Fined for Using Bait and Live Decoys.--Two poultry farmers of Delaware, who hunted wild ducks in Sussex County on October 27, 1938, by aid of bait and live decoys, entered pleas of guilty in Federal Court at Wilmington, Del. on January 3 and were fined \$10 each.

#### Alaska Game Law Administration

Chief Clerk Visits Washington.--Lance E. Hendrickson, chief clerk of the Alaska Game Commission, Juneau, arrived in Washington on November 23 to confer with officials of the Civil Service Commission, the General Accounting Office, and the Biological Survey on personnel and fiscal matters.

New Chairman Appointed.--On the opening day of its 1939 session, the Alaska Game Commission elected Earl N. Ohmer chairman. Mr. Ohmer succeeds Irving McK. Reed, who recently resigned because of the press of private business. Mr. Ohmer is a resident of Petersburg, where he is engaged in fur farming and in the shrimp and salmon canning business.

Patrols Duck Flats Near Juneau.--Wildlife Agent H. Douglas Gray, of District 1, patrolled the duck flats in the Juneau area and arrested and caused the conviction of three persons for selling deer meat in the town of Douglas. On October 20 he made an airplane trip to Sitka to confer with the Japonski Naval Air Station officials regarding hunting parties from that base. On October 25 Mr. Gray, accompanied by Deputy Agent Huntoon, left Sitka on board the motorship Seal for an intensive patrol of trapping areas in the district. During the trip B. A. Patterson, a member of the Canadian halibut schooner Lois N, was arrested at Whale Bay, Baranof Island, for violation of the Lacey Act. Patterson admitted he killed a deer in British Columbia, without a license required by law in that province, and transported the carcass across the border into Alaska. In court, the defendant was charged with hunting without a license and possession of illegally taken deer. He was convicted and fined \$50 on each count.

Lacey Act Violators Apprehended.--Early in October, Wildlife Agent Hosia Sarber, of District 2, completed cases against three American citizens charged with violations of the Lacey Act (killing two cow moose on the Canadian side of International Boundary and transporting them across into Alaskan territory) and with the possession of cow moose in Alaska. One of the defendants turned State's evidence, and the other two were tried before a jury, which brought in a verdict of guilty. One violator received a \$150 fine and a 6-months suspended sentence, another a \$100 fine and a 6-months suspended sentence, and the third was discharged by the Court. Affidavits and other information have been forwarded to the authorities in British Columbia for further action should the violators again venture into Canada.

Arrests Alien.--Working with Wildlife Agents Sarber and Clarence Rhode, Deputy Agent Gareld Banta apprehended an alien allegedly trapping and dealing in furs on the Alaska side of the Portland Canal. The trial was set for January 15.

Makes Patrol by Pack Train.--Accompanied by Registered Guide Harry Boyden, Mr. Rhode, of District 4, made a trip by pack train from Nabesna to the Horsefeldt country early in October. He thoroughly patrolled the Copper River Flats during the short open season in that district. Several investigations were completed in and around Cordova, and one was made in Valdez in connection with bounty frauds. During November and December, Agent Rhode assisted Deputy Agent Banta in making an intensive patrol of the trapping grounds of District 3.

Checks Shipments of Fur and Game.--During the first part of this quarter Wildlife Agent Harold W. Gallwas, of District 5, checked outgoing shipments of fur and game in and around Seward and patrolled the moose hunting grounds on the Kenai Peninsula. On November 1 he went to the Seldovia area where he made investigations pertaining to aliens in possession of firearms. Several guns were seized on this trip. He returned to Seward on November 11.

Patrols Isolated Area.--On October 10 Wildlife Agent Jack Benson began a 2-months preseason trapping patrol in the isolated Lake Minchumina section north of McKinley National Park. He was accompanied by Wayne House, a resident of McGrath. This is one of the most outstanding patrol trips made by an Alaska Game Commission agent. Over 600 miles were covered on snowshoes. The agent arrested 5 early trappers and seized 26 marten skins and 2 mink skins. Three violators were charged with early trapping and the possession of marten skins, and two with early trapping only. Four of the men were tried and received sentences ranging from \$50 to \$250 and 3 months in jail.

Completes Beaver Sealing Operations.--Wildlife Agent Carlos M. Carson, of District 8, traveled by river boat through the Mulchatna River district to complete the sealing of beaver skins and to survey beaver conditions in that area. He returned to headquarters October 10. Agent Carson also visited the Naknek, Togiak, Igushik, and Wood River district by boat and dog team to check early trappers and persons trapping without a license.

Checks Illegal Trapping Activities.--During October Wildlife Agent O'Connor, of District 9, patrolled the Willow Creek area and investigated the killing of two cow moose. After a short vacation, he went to Iliamna by airplane to seal beaver skins and check on illegal trapping activities reported in that district. He spent the remainder of the quarter on a special migratory bird patrol on the Susitna Flats and in the regular early patrol work of the trapping grounds included in this district.

Conducts Caribou Patrol.--Wildlife Agent White, of District 11, spent October on the regular caribou patrol in the Circle and Richardson Highway areas. He was occasionally assisted by Agents Collins and Rhode. On November 8 Mr. White left Fairbanks by plane for Tanana Crossing, where he hired a dog team for a trip into the Sheep Creek country to investigate early trappers. One trapper was apprehended and taken to Fairbanks, where he pleaded guilty and received a 60-day sentence.

Agent Takes to Air.--Since Wildlife Agent Grenold Collins has been employed by the Commission he has advocated the use of an airplane for patrolling his large districts. He finally decided to try one at his own expense. On October 2 he completed the purchase of a plane and left Anchorage for Fairbanks. At Fairbanks he assisted Agent White in making an airplane patrol of the caribou migration in that district. On October 12 Mr. Collins flew from Fairbanks to Nome, visiting enroute Ruby, Nulato, and White Mountain. He made several investigations on this trip and gathered information that will be useful later in locating beaver poachers on the Innoko River. During November



and December, he visited Kivalina, Cape Lisbourne, Point Hole, the Noatak and Kobuk River areas, Unalakleet and Marshall.

Violations Reported.--Of 64 cases reported during the quarter ending December 31, 15 involved aliens, 44 the illegal taking of fur and game, and 5 the accidental taking of fur. Fur and other articles confiscated had an estimated value of \$1,285. Violators were fined a total of \$2,210 and sentenced to 870 days in jail. Seizures included 28 firearms, 7 furs of various kinds, 1 boat and outboard motor, 7 animal traps, and 1 bear trap.

#### PREDATOR AND RODENT CONTROL

Takes Extended Field Trip.--Mr. Green began an extended field trip to become better acquainted with cooperators and to attend the meeting of the National Woolgrowers Association of San Angelo, Tex., January 24-26. He also attended the State Woolgrowers' meetings at Idaho Falls, Idaho; Pendleton, Oreg.; Yakima, Wash.; Butte, Mont.; and Salt Lake City, Utah. He visited several district agents to discuss the field work.

Represent Lebanese Republic.--President Bayard Dodge and Professor R. J. Pauly, of the American University of Beirut, Lebanese Republic, held a conference on January 12 with members of the Bureau in Washington. Joining the discussion were F. E. Garlough, of the Control Methods Research Laboratory, at Denver, and F. M. Connable, of Springfield, Ohio, representing a commercial company.

Dr. Dodge and Professor Pauly were interested in exploring the possibilities of suitable commercial production, for use in this country in rat control work, of red squill bulbs grown in the countries bordering the southeastern shores of the Mediterranean Sea. Arrangements were completed to study the toxicity of the bulbs produced there, the supply available, and other factors dealing with the problems of producing effective red squill powders.

After the conference, Mr. Garlough inspected the research work being conducted by H. J. Spencer on mouse control in the orchards of Virginia. En route to Denver he stopped at Lafayette, Ind., for a meeting with Mr. Oderkirk.

Prairie Dog Control Effective.--Darwin Ivy, junior assistant in Texas, has recently been doing clean-up work on 40 sections of ranch land where a prairie-dog control project was started in February, 1936. It is estimated that about 99 percent of the prairie dogs in this area have been eliminated during the past two seasons. District Agent Landon says that the ranch will now carry 1,000 more cattle than before and also 4,000 head of sheep.

Transferred to North Carolina.--L. C. Whitehead, assistant district agent in Texas for several years, has been transferred to Raleigh, N.C., as district agent in rodent control for Region 7 under James Silver's supervision. Mr. Whitehead spent a few days in the Washington Office before beginning his new duties on January 23. He succeeds Mr. Lay, who was transferred to Region 8, last July.

Damage by Rats Along the Ohio River.--During the past spring and summer, rats heavily infested areas along the Ohio River and its tributaries, largely in bottom lands, District Agent G. C. Oderkirk reports. Corn and melon crops were severely injured by rats, and numerous fields required replanting. One persistent farmer in Hamilton County, Ohio, planted a 40-acre field three times, with almost a complete loss of the crop each time. Somewhat similar conditions have been observed in the past, but the areas have always been restricted. About 15,000 pounds of rat bait were used on farms in the affected area early in November.

Mr. Oderkirk also reports that field mice are numerous in practically all parts of the Middle West. Orchardists found some damage to fruit trees, but severe early winter injury was prevented by circulating a warning to growers to carefully observe the infestation in orchards and apply control measures where needed.

The rodent population has probably reached its highest peak in the past decade throughout the North Central States. Cottontail rabbits are generally abundant, and considerable damage has been inflicted, particularly in commercial nurseries and apple orchards. One southern-Indiana fruit grower reported that in 3 days five of his men armed with shotguns killed 143 rabbits on his land. Because of the severe damage to ornamental shrubs, much of which occurred in villages and cities, many requests were made for control information and assistance.

Assigned to Region 7.--Hunter Andy Ray was transferred from the Texas District to Region 7 on permanent detail to assist in predator control on the national forest of the region and to work in cooperation with the State Game Departments of Florida, Georgia, North Carolina, and South Carolina. He is stationed with Mr. Whitehead in Raleigh, N.C.

Division Holds Conference.--The Division held a conference at Phoenix, Ariz., from December 5 to 9. Many cooperators, including Senor Morelos Gonzalez, Mexican Consul at Phoenix, Ariz., and representatives of various woolgrowers' associations throughout the West, attended the sessions and made addresses. The regional directors of Regions 1 and 2 and approximately 40 men of the Division attended the conference. Regional Director D. A. Gilchrist of Region 2 did much to make the conference a success.

Detailed to Washington for Short Period.--Following the practice of the Division of detailing field men to a short period of special duty in the Washington office so that they may become more familiar with the Division as a whole, H. H. Haecker, assistant to Charles C. Poole, of the Sacramento, Calif., office, arrived in Washington on January 2 to assist Mr. Green.



# THE SURVEY

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GENERAL NOTES Department of Agriculture

Attends Conferences, Addresses Meetings.--On February 2, Dr. Gabrielson went to Boston to attend the New England Game Conference and returned to Washington on February 8. He also participated in the fourth North American Game Conference, held in Detroit, Mich., February 13-17. The following week, he delivered an address at the Conservation Short Course Banquet, held in Ames, Iowa, on February 23. The Short Course is sponsored by the Iowa State College in cooperation with the Iowa Conservation Commission, Iowa Wildlife Federation, and the Federated Garden Clubs of Iowa. On February 24 he addressed a group of conservationists in Marshalltown, Iowa.

Dr. Gabrielson talked on the conservation of our natural resources at a meeting of the Washington Branch of the American Association of University Women, held on February 28. He spoke at Hartford, Conn., on March 4, at a meeting sponsored by the Connecticut State League of Sportsmen's Clubs. His subject was "General Wildlife Conservation."

Dr. Gabrielson spent March 8 to 23 inspecting some of the refuges in the Southeast, including Mattamuskeet, Cape Romain, Bull Island, Savannah River, and Okefenokee, and going as far south as Key West, Fla.

Attends Boston Meeting.--Associate Chief Henderson attended the meeting of the New England Game Conference, which was held in Boston on February 3 and 4.

Inspects Work in Southwest.--Mr. Henderson returned March 13 from a trip to the Southwest, where he inspected the Bureau's work and conferred with Bureau personnel at Denver, Colo., Albuquerque, N. Mex., Phoenix, Ariz., and at the Rabbit Experiment Station, Fontana, Calif. He also visited the new Kofa Game Range in Arizona.

Wildlife Conference.--Bureau employees were the authors of 24 papers presented at both the general and technical sessions of the fourth North American Wildlife Conference, held in Detroit, Mich., February 13-17.

In the general sessions, devoted to subjects of national interest, the following Bureau representatives presented papers: Albert M. Day (Pittman-Robertson Act), Ira N. Gabrielson (A Continental Review of the Wildlife Resource), Clarence Cottam (Need Mosquito Control be Incompatible for Wildlife?), and Walter P. Taylor (Farmer-Sportsmen, A Partnership for Wildlife Restoration).



Wildlife management was the theme of the technical sessions, with Bureau employees presenting the following papers: Arthur S. Einarsen, "Oregon's Open Season on Antelope for 1938"; D. I. Rasmussen, "Mule Deer Range and Population Studies in Utah"; Joseph C. Allen, "Ecology and Management of Nelson's Bighorn on the Nevada Desert Ranges"; W. S. Bourn and C. Cottan, "The Effect of Lowering Water Levels on Marsh Wildlife"; Ward M. Sharp, "Propagation from Seed of Potamogeton and Sagittaria"; Don R. Coburn and E. R. Quortrup, "Application of Recent Findings in Botulism"; George L. Girard, "Life History and Management of the Shoveler"; C. J. Henry, "Results of Management on the Lower Souris, North Dakota"; A. V. Hull, "Conservation of Trumpeter Swans"; Robert E. Towle, "Wildlife Management and Reclamation Reservoir"; Robert H. Smith, "Management of Overflow Areas, Lower Mississippi Region"; John H. Steenis, "Marsh Management on Great Plains Nesting Waterfowl Refuges"; Richard Griffith, "Effect of 1938 Hurricane on Waterfowl Areas of the North Atlantic Coast"; C. M. Aldous, "Progress in Woodcock Management"; F. H. May, A. C. Martin, and Talbott Clarke (F.S.), "Early Winter Foods of the Wild Turkey on the George Washington National Forest, Virginia"; E. R. Kalmbach, "Predation with Particular Reference to Wildfowl Production"; F. M. Uhler, C. Cottan, Talbott Clarke (F.S.), "Food of the Common Snakes of the George Washington National Forest, Virginia"; Lawrence E. Hicks and Daniel Leedy, "Techniques in Pheasant Trapping and Population Control"; Allen M. Pearson and George C. Moore, "Nesting Habits of the Mourning Dove in Alabama"; and Herbert H. Dill, "Shelters and Feeding Stations for California Valley Quail".

Leaders of the Cooperative Wildlife Research Units met with the Technical Committee of the American Wildlife Institute, headed by Aldo Leopold, chairman, and individually gave resumes of their current research programs.

Bureau employees attending the conference included Frank G. Ashbrook, W. B. Bell, Leo K. Couch, Paul D. Dalke, A. C. Elmer, C. O. Handley, Daniel Janzen, S. Barry Locke, W. L. McAtee, and Albert Moore.

Survey Group Aids Symphony.--The "Biological Survey Group of Friends of the National Symphony Orchestra" donated \$50.40 to this year's sustaining campaign, which ended February 28. The contributions of the 22 members of the Bureau constituting this group, together with small amounts given by other members of the Survey who are interested in continuing music of this character in the Nation's capital, give this group a voting membership in the National Symphony Orchestra Association, as in former years. The only other bureau of the Department listed in the membership last year was the Forest Service.

Addresses Paleontologists.--W. L. McAtee addressed a meeting of the Paleontological Society of Washington on April 6 on the subject of natural selection and participated in the lengthy general discussion that followed.

Discusses Animal Names.--"Those Sporting Plurals," by W. L. McAtee, has recently been issued as a mimeographed leaflet. Dealing with usage in forming the plural of names of animals, the publication is another in Mr. McAtee's

series on suggestions to Biological Survey writers. The leaflet has been mailed to the BS-FO list, and notice of its availability circulated in the Washington office. If, however, any who may wish it have been missed, they can obtain copies by addressing the Technical Adviser, Biological Survey, Washington, D. C.

Talks on Alpine Plants.--On Tuesday, April 4, Dr. Gabrielson gave an illustrated talk on Western American Alpine Plants before the Botanical Society of Washington.

Wildlife Exhibit at San Francisco Fair.--Oregon has a wildlife exhibit at the World's Fair, which opened in February on Treasure Island in San Francisco Bay. The exhibit includes live birds that were taken from the Tule Lake Refuge, Calif., and Malheur Refuge, Oreg., and transported to the Sacramento Refuge, Calif., where they were kept until taken to the Fair. The Bureau's CCC units cooperated by feeding and caring for the birds while they were held at the Malheur Refuge headquarters and by constructing the crates in which the birds were shipped from the Sacramento Refuge to the Fair.

Secretary and Chief Broadcast on Wildlife Week.--Observance of National Wildlife Restoration Week on the National Farm and Home Program included a broadcast on March 20 by Secretary Wallace and one on March 24 by Dr. Gabrielson.

After discussing the importance of land-use policies to wildlife and tracing the history of wildlife work by the Federal Government, Secretary Wallace said: "It is my conviction that we shall restore our wildlife to something approaching its former abundance only by devoting more attention to wildlife in connection with all our activities--continuing, of course, our restrictions on hunting and our provision of sanctuaries, but at the same time making wildlife at home almost everywhere."

Dr. Gabrielson spoke on "Wildlife Restoration in Practice." He contrasted conditions in 1934 and now and described the Malheur Refuge as an example of wildlife restoration. In conclusion, he said: "Compared with what we still have to do, our accomplishment at present seems little. Compared with any other program of waterfowl or wildlife restoration, it seems magnificent. Only by continuing this kind of work can we be sure that the ducks and geese in the future will move north and south over the face of this continent in numbers even approaching their former glory. We are never going to restore the wildlife population that existed here at one time, but we can have many more birds and mammals and fishes than we have now. And I think that we have already demonstrated the practical ways in which these increases can be realized."

Speaks to Garden Club.--At a meeting of the University of Maryland Garden Club, held in College Park, Md., on April 12, Dr. Gabrielson spoke on "Western American Native Plants of Garden Interest."

Join in Wildlife Week Broadcast.--Mr. Henderson and Frederick C. Lincoln participated in a special broadcast under the auspices of the National Wildlife

Federation opening wildlife week on Sunday, March 20. The program was broadcast by the Mutual Broadcasting System. Mr. Henderson joined in a round-table discussion of the Federal-aid program with Senator Key Pittman, of Nevada, and Congressman A. Willis Robertson, of Virginia, authors of the Pittman-Robertson Act. At the conclusion of that discussion, Mr. Henderson talked by telephone with Mr. Lincoln who was flying in a plane over New Jersey marshes, their conversation being broadcast. Mr. Lincoln later discussed his observations from the plane in more detail with an announcer who was flying with him.

Serves on Refugee Committee.--Frank G. Ashbrook was designated by the Departmental Committee on Refugee Problems to serve as a member of a subcommittee studying technical aspects of the possibilities of refugee settlement in Alaska. Other members of this subcommittee were Robert Marshall, Forest Service, chairman, and T. D. Rice, Bureau of Chemistry and Soils. The subcommittee held a number of meetings and approved a final report, which was submitted to Dr. Mordecai Ezekiel, Economic Advisor to the Secretary. The subcommittee then discussed the report with the Departmental Committee and is now revising it.

On Land-Use Coordinating Committee.--Albert M. Day, Chief of the Division of Federal Aid in Wildlife Restoration, has been designated Biological Survey member of an inter-bureau Department committee to cooperate with members of the Bureau of Agricultural Economics in developing plans for coordinated land-use programs and reviewing pertinent information submitted from the field. Participation in the unified agricultural program, says Mr. Day, affords an opportunity to benefit wildlife by emphasizing the fundamental requirements of wild birds and mammals--land, food, and cover--in planning the most effective use of areas.

In the recent reorganization of the Department, the Bureau of Agricultural Economics was designated as the organization to correlate land-planning activities of all agencies of the Department. An Agricultural Program Planning Board has been established composed of representatives of the various land-use agencies with responsibility for reviewing programs and developing unified departmental action, and the inter-bureau committee will report to this Board. State land-planning committees will consist of representatives of the BAE, the Extension Service, and all other interested agencies. County land-planning committees will be set up to develop programs and plans locally which will be cleared through the State committee, the inter-bureau committee, and the Program Planning Board to the Secretary. Through this machinery, it is hoped that all departmental agencies having contacts with farmers in the counties will be able to correlate their programs toward a common goal to prevent working at cross purposes. The first major undertaking will be to select and organize one county in each State as a demonstrational and experimental unit.

Speak at Mammalogist Meeting.--Eight members of the Biological Survey addressed the American Society of Mammalogists at its annual meeting held April 3 to 7 in Baton Rouge, La., and attended by 13 Bureau members. Dr. Walter P.



Taylor discussed "Life Zones"; E. A. Goldman, "Original Descriptions of Mammals"; Arthur H. Howell, "Variation in *Peromyscus polionotus*"; Charles H. Rouse, "Food Habits of Coyotes on the Wichita Mountains Wildlife Refuge, Okla."; and John J. Lynch, "Observations on the Ecology of the Louisiana Muskrat Marshes." A. L. Nelson presented a paper on "Summer Food of Gray Foxes at Camp Lee Quail Reserve, Virginia," prepared in collaboration with C. O. Handley, who was not present. Donald A. Spencer demonstrated a device for electrical recording of the activities of small mammals, and Stanley P. Young described experiences in hunting mountain lions with the camera, using slides to demonstrate the results. A paper by Theo H. Scheffer on "Contributions to a Knowledge of the Smaller Ground Squirrels of the Pacific Northwest" was read by title in Mr. Scheffer's absence. Bureau attendants besides those on the program were: Mr. Henderson, Dr. Paul D. Dalke, Dr. H. H. T. Jackson, Miss Viola S. Schantz, and Dr. Allen M. Pearson.

With the exception of the election of J. Kenneth Douth as a director succeeding Tracy I. Storer, all officers were reelected by the Society, including Dr. Jackson, president; Dr. Taylor, vice-president; Miss Schantz, treasurer; and Dr. William B. Davis, Bureau collaborator, corresponding secretary. Mr. Howell was reelected editor of the Society's journal by the Board of Directors.

#### ADMINISTRATION

Memoranda to Field Officers Issued.---Following is a list of the memoranda issued in the "Administrative Field Office" (AFO) series since the January issue of the SURVEY.

- No. 14. Supplement No. 1. Reporting for action of Director of Personnel cases of misconduct, neglect of duty, and irregularities on part of any Bureau employee including CCC; granting of annual leave to be withheld until decision reached by Director of Personnel. (January 23.)
- No. 21. Revised. Amendment No. 8. Stocking and distribution of forms required in connection with the solicitation of bids. (March 4.)
- No. 39. Revised. Supersedes Nos. 3, 39 and amendment 1, 56 and amendments 1 and 2, 95 and amendments 1 and 2, 96 and amendments 1 and 2, 125, 127, 188 and amendment 1, 243. Transportation of Government Personnel. (February 16.)
- No. 76. Revised. Amendment No. 2. Use of revised form Bi-988, dated October 1938, Recommendation for Personnel Action. (February 10.)
- No. 119. Revised. Service-station deliveries of gasoline and oil to Bureau-owned vehicles. (January 23.)
- No. 151. Amendment No. 1. Procedure in submitting medical certificates for approval before probational appointment. (March 2.)
- No. 259. Return of containers loaned by vendors. (January 16.)
- No. 260. Outside inquiries as to status of waterfowl. (January 16.)
- No. 261. Distribution of "Wildlife Review" to field personnel. (February 16.)
- No. 262. Procedure in appointments involving personnel inquiries. (March 7.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 14. Amendment No. 2. Supersedes amendment No. 1 (revised) dated November 12, 1938. Blanket clearance for the purchase of special lubricating oils for certain Diesel-powered equipment. (February 4.)
- No. 32. Supplement No. 9. Contracts for service-station deliveries of gasoline and lubricating oil in the States of Georgia, Florida, and Kentucky. (January 19.)
- No. 43. Amendment No. 1. Mandatory contracts for the procurement of batteries, battery equipment and parts, and automatic battery fillers (Classes 16 and 17, Supplement No. 2). (February 1.)
- No. 45. Amendment No. 1. Mandatory contract for the procurement of spark plugs for use in Government-owned motor propelled vehicles and boats to August 31, 1939 (Class 17, Supplement No. 1). (February 28.)
- No. 60. Supplement No. 1. Contract for the procurement of portable drinking fountains for the period April 1, 1939, to March 31, 1940 (Class 63, Supplement No. 2). (February 28.)
- No. 69. Supplement No. 1. Purchase of certain items from applicable contract mandatory. (January 25.)
- No. 69. Supplement No. 2. Mandatory contracts for the procurement of battery cables, tire chains, clutch facings, brake linings, repair parts and accessories for motor vehicles, tractors, and road-building machinery, including air compressors, graders, shovels, terracers, etc., for the period Jan. 1 to Dec. 31, 1939 (Class 8 and Class 66, Supplement No. 1). (February 17.)
- No. 70. Contracts for the procurement of drafting-room and office supplies for the period December 1, 1938, to November 30, 1939 (Class 53). (January 16.)
- No. 71. Changes in Procurement Division contracts. (January 28.)
- No. 72. Changes in Procurement Division contracts. (February 15.)
- No. 73. Mandatory contracts for the procurement of electric fans for the period January 1, 1939, to August 31, 1939 (Class 17, Supplement No. 6). (February 27.)
- No. 74. Mandatory contracts for the procurement of electric refrigerators, for the period February 1, 1939, to January 31, 1940 (Class 26-Supplement No. 1). (February 27.)
- No. 75. Mandatory contracts for the procurement of office furniture for the period January 1 to December 31, 1939 (Class 26). (February 28.)
- No. 76. Contracts for the procurement of chair cushions for the period December 15, 1938, to October 31, 1939 (Class 34, Supplement No. 1). (February 27.)
- No. 77. Changes in Procurement Division contracts. (February 27.)
- No. 78. Contracts for the procurement of instruments of precision and accessories and parts for the period January 1 to December 31, 1939 (Class 18). (March 6.)

## PUBLIC RELATIONS

Addresses Izaak Walton Convention.--Col. Sheldon addressed the annual convention of the Izaak Walton League of America, held in Chicago March 16 to 18. He discussed the Survey's wildlife restoration program. He reports a large and interested attendance at the meeting with representatives from every section of the country present.

Broadcasts.--Farm and Home Program broadcasts by Howard Zahniser since the last issue of THE SURVEY have included discussions of the big-game inventory, improved rodent-control methods, the Cabeza Prieta and Kofa ranges for bighorns, the waterfowl inventory, and the CCC work on refuges. On March 17 Mr. Zahniser participated in a discussion of the beaver and flood control with Wallace Kadderly, Chief of the Radio Service, and Betsy Pitt, of the Forest Service. Mimeographed transcripts of these programs are listed on page 50.

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Crow damage to fall grain crops in Oklahoma in 1937, with a comparison of field and questionnaire methods of appraisal. By Ralph H. Imler, Junior Biologist, and E. R. Kalmbach, Senior Biologist, Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-123, 15 pp. January 1939. Received February 6.
- Factors in nesting losses of the California valley quail. By E. E. Horn, Biologist, Section of Wildlife Surveys, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-124, 7 pp. January 1939. Received February 15.
- Natural plantings for attracting waterfowl to marsh and other water areas. Wildlife Research and Management Leaflet BS-125, 5 pp. January 1939. Received February 6.
- History and significance of American wildlife. II: Trends from exploitation to restoration. By H. P. Sheldon, Chief, Division of Public Relations. Wildlife Research and Management Leaflet BS-126, 7 pp. February 1939. Received February 11.
- The CCC and wildlife. Published by the Civilian Conservation Corps. (Contribution by the Biological Survey.) 17 pp. 1938. Received March 4.
- An efficient trap for the fox ranch. By C. F. Bassett, Director, U.S. Fur Animal Experiment Station, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-127, 5 pp. March 1939. Received March 28.
- A feeder for foxes. By C. F. Bassett, Director, U. S. Fur Animal Experiment Station, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-128, 3 pp. March 1939. Received March 24.
- Cooperative wildlife-management research, 1938. Prepared in the Section of Wildlife Surveys, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-129, 4 pp. March 1939. Received March 28.



Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

- Aldous, C. M. Coyotes in Maine. Jour. Mammal. 20: 104-106. Feb. 1939.
- Aldous, Shaler E. Pine in the diet of white-tailed deer. Jour. Forestry 37: 265-267, illus. March 1939.
- Ball, H.; Baugartner, L.; Gensch, R.; May, F. H.; Knappen, P.; Smith, C. F. Christmas bird census. Bird-Lore 41: 23. Jan.-Feb. 1939.
- Bassett, Charles F. The meat requirements of fox vixens during the reproductive period. Amer. Fur Breeder 11 (8): 10, illus. Feb. 1939. Also in: Canad. Silver Fox and Fur 5 (2): 16. Feb. 1939; Fur Trade Jour. Canada 16 (6): 10, illus. Feb. 1939; Natl. Fur News, p. 5, Feb. 1939.
- Cheesman, Wm. H. United States Bureau of Biological Survey. Amer. Ann. 1939: 86-88. 1939.
- Cooke, H. T. Some interesting recoveries of banded birds. Bird Banding 9: 184-190. Oct. 1939.
- DuMont, Philip A. Summary of bird banding, Sand Lake Waterfowl Refuge. Inland Bird Banding News 10 (4): 10-12. Dec. 1938. (Mimeographed)
- Banding at Sand Lake Refuge. Inland Bird Banding News 11 (1): 3. March 1939. (Mimeographed)
- Enders, Robert K. Mink breeding through the microscope. Canad. Silver Fox and Fur 4 (12): 5-6, illus. Dec. 1938. Also in: Fur Canada 4 (4): 3-5, illus. Dec. 1938; Amer. Fur Breeder 11 (7): 6-8, illus. Jan. 1939; Black Fox Mag. 22 (2): 10-11, 29-30, illus. Jan. 1939; Brit. Fur Trade 22 (185): 55. Jan. 1939; Natl. Fur News 10 (12): 5, 13, 14, illus. Jan. 1939; Fur Trade Jour. Canada 16 (5): 10-11, illus. Jan. 1939.
- Gabrielson, I. N. Farmer conservationists. Land Policy Rev. 2 (1): 12-15. Jan.-Feb. 1939.
- Cotton, C.; Nelson, A. L.; Martin, A. C. Christmas bird census. Bird-Lore 41: 22-23. Jan.-Feb. 1939.
- Girard, G. L. Notes on migratory waterfowl in Idaho. Univ. Idaho School of Forestry Bul. 8. Vol. 33 (22): 71-74. Dec. 1938.
- Sage grouse and the State's conservation program. Univ. Idaho School of Forestry Bul. 8. Vol. 33 (22): 66-67. Dec. 1938.
- Goldman, E. A. Two new pocket gophers from Lower California. Proc. Biol. Soc. Wash. 52: 29-32, March 11, 1939.
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Press and Radio Information and Addresses, copies of which (chiefly in mimeograph) may be obtained from the Division of Public Relations, have been issued as follows:

Hunters increasing, license returns show. Press statement 1296-39. Released February 5.

Men in many occupations are convicted of illegal hunting. Press statement 1329-39. Released February 7.

Federal game-law violators fined. Press statement 1389-39. Released February 20.

Fox and mink foods study will benefit fur farmers. Press statement 1456-39. Released March 6.

Federal-State plan for wildlife restoration now well under way. Press statement 1524-39. Released March 19.

Sentenced to jail for illegal fur shipment. Press statement 1626-39. Released March 28.

Took muskrats illegally. Press statement 1641-39. Released March 29.

1939 duck stamp design announced. Press statement 1645-39. Released March 30.

Alaska fur production up in 1938 but income drops. Press statement 1648-39. Released March 31.

Two new game ranges established in Arizona for mountain sheep. Press statement 1668-39. Released April 4.

Jailed for selling wild ducks. Press statement 1680-39. Released April 4.

Youth violating duck law sentenced to study game. Clip sheet No. 1076. Released February 12.

Federal lands help big-game animals. Clip sheet No. 1078. Released February 26.

Sees farmer as best friend of wildlife. Clip sheet No. 1081. Released May 19.

Moles build subways for bulb-eating mice. Clip sheet No. 1085. Released April 16.

44,000 big-game animals. Radio talk by Howard Zahniser, National Farm and Home Program. January 27.

Improving methods of rodent control. Radio talk by Howard Zahniser, National Farm and Home Program. February 3.

Ranges for the bighorns. Radio talk by Howard Zahniser, National Farm and Home Program. March 10.

The waterfowl inventory of 1939. Radio talk by Howard Zahniser, National Farm and Home Program. March 17.

The beaver does his part in flood control. Radio talk by Howard Zahniser, National Farm and Home Program. March 17. (Et al)

Considering wildlife. Radio talk by Secretary Wallace, National Farm and Home Program. March 20.

Wildlife restoration in practice. Radio talk by I. W. Gabrielson, National Farm and Home Program. March 24.

"Hans and Eggs." Radio talk by Howard Zahniser, National Farm and Home Program. March 31.

Survey and big game. Farm Flash. Released February 13.

Tree nuts for game. Farm Flash. Released February 16.

Soils and wildlife. Farm Flash. Released February 22.

Northeast wildlife plans. Farm Flash. Released February 27.

Karakul sheep. Farm Flash. Released March 3.

Big bear management. Farm Flash. Released March 15.

Mole-mouse mystery. Farm Flash. Released March 21.



## WILDLIFE RESEARCH

Wildlife Surveys

W.P.A. Workers Efficient in Laboratory.--During January, W.P.A. workers H. Bryan, J. Jeffers, R. Muse, J. West, Mrs. M. Nichols, Miss I. Powell, and Miss C. Proctor have continued to render efficient service in the mammal laboratory, according to Dr. H. H. T. Jackson. Progress has been made on cleaning the Bureau's tanned mammal skins. This work involves numerous handlings. A summary of these workers' accomplishments during the month follows:

1. Seven hundred and fifty hides have been numbered, checked, labeled, and arranged in geographical order according to their generic classification.
2. One hundred and sixty-two Canis skulls and 625 Ursus skulls were rearranged and expanded from overcrowded cases.
3. Four thousand and eighty-five scientific names were stamped in collectors' field catalogs.
4. Fifty-five pages of manuscript were typed.
5. Five thousand eight hundred and seventy skull vial contents were checked with vial specimen labels and the skull vials were washed.
6. Ten thousand six hundred and fifty Geomyidae were checked, and scientific names were penciled on specimen labels when they were missing.

Four W.P.A. workers, R. Mills, G. Cobb, V. Boyde, and M. Green, were employed in the taxidermy shop. Their work consisted of scraping, degreasing, and relaxing specimens in the preparation of old bird and mammal skins for scientific study purposes. In January, 7 bird skins and 5 mammal skins were made up. These employees also cleaned 525 fur skins.

Inspects Minnesota Forests.--After attending the wildlife conference in Detroit, Leo K. Couch conferred with Dr. Raphael Zon, Director, Lake States Forest Experiment Station, St. Paul, Minn., on February 19. He also inspected the forest-wildlife research work directed by Shaler E. Aldous. Experimental areas on the Superior National Forest were visited with particular reference to possible winter deer-yard management. Several miles of deer yards were covered on snowshoes through 3 to 5 feet of snow in subzero weather. Supervisor Harmon, of the Superior National Forest, and Ranger Scholl, of the Temperance Ranger District, were contacted. At Baudette, Minn., Mr. Couch and Mr. Aldous examined the Beltrami and Pine Island Resettlement areas with Jack Manweiler, wildlife technician, Soil Conservation Service, and photographed the caribou recently introduced from Saskatchewan.

Conferences were also held with C. E. Knutsen, supervisor, Guy C. Keyes, and Jerone Stoudt, of the Chippewa National Forest. The beaver farm of A. C. Tilden, Hill City, Minn., was inspected on February 25. Mr. Couch returned to Washington 2 days later.

Analyze Fox Stomach Contents.--Twenty-four fox stomachs obtained during February brought the total that has been collected in Alabama to 254. Through the cooperation of the Food Habits laboratory, analyses of 56 stomachs previously collected were made available. Of the 254 stomachs, 152 have been given final examination. Among the 56 stomachs recently examined were 28 taken in

the Black Warrior National Forest and 21 taken elsewhere, mainly in southern Alabama. Seven were found to be empty or unfit for tabulation. The 28 stomachs from the Black Warrior forest contained, on a frequency basis, the following: Insects, 26; fruits, 21; unidentified bones and animal matter, 3; rodents, 1; and an unidentified feather, 1. The other 21 stomachs contained: Insects, 19; fruits, 11; rabbits, 9; song birds, 4; rodents, 3; poultry, 2; quails (?); and eggs, 1. Persimmons, which were not always fully ripe, were taken more freely than any other fruit.

Examine Mourning Doves.--Dr. Allen M. Pearson, leader of the Alabama Cooperative Wildlife Research Unit, reports that several hundred doves were dissected and examined during January before the hunting season closed at the end of the month. Testes and ova measurements indicate that the 1939 breeding season started earlier this January than in January 1938. Cooing was noted during the latter half of the month and apparently accompanied the seasonal increase of gonad size. Mild winter weather may have influenced the early appearance of breeding criteria.

Plant Food Strips.--In March, records for the bobwhite quail project in Alabama were obtained from the experimental plots, and all other field work was concentrated on the trial-demonstration area at Marion Junction, according to Dr. Pearson. Approximately 8 miles of food strips were planted along the edges of fields and through open woods. The strips, 6 to 12 feet wide, were plowed with a tractor equipped with a gang disc plow. The seeds were broadcast and then covered with a cultipacker. The seeds used were Lespedeza sericea, common lespedeza, sesbania, and Florida beggarwood. Cover improvements were made by topping over small trees and by making brush piles.

Compile Records of Alabama Deer Study.--Tom Atkeson and Lloyd Webb, of the Alabama Cooperative Wildlife Research Unit, devoted most of their time during January to compiling planting-frequency records for the winter season from the nine areas that were logged during a series of years. Warm weather and frequent rains probably accounted for the availability of comparatively large amounts of green herbaceous vegetation in Sumter County. Mr. Webb continued field work alone during the latter part of the month, while Mr. Atkeson was detailed to the Food Habits laboratory in Washington for stomach analysis work.

Browse notes were taken at a number of localities. The plants most frequently eaten by white-tailed deer were, in order of importance, as follows: Red gum twigs, sumac twigs, red cedar, mushrooms, smilax, loblolly pine buds, and post oak twigs.

Continue Census Technique Studies.--During January, Dr. Logan J. Bennett, leader of the Pennsylvania Cooperative Wildlife Research Unit, made observations on cottontails, ring-necked pheasants, white-tailed deer, and ruffed grouse in Elk, Forest, Huntingdon, Lehigh, Warren, and Centre Counties in Pennsylvania.

Census technique studies of Pennsylvania deer were carried on in Centre and Huntingdon Counties. The permanent quadrats used in the study

of pellet groups were snow-covered during January, and the counts were not made. Experimental work was done with an airplane in making actual counts of deer on 8,000 acres in the two counties.

Meets with Agents and Sportsmen.--On January 14, Dr. Bennett gave a talk to a group of county agents and extension workers meeting at Hotel Harrisburger in Harrisburg, Pa. He also attended the annual meeting of the Montgomery County sportsmen in Norristown, Pa., on January 28.

Inspects Unit Work.--The work at the Pennsylvania Cooperative Wildlife Research Unit was inspected by Leo K. Couch on January 27. Contacts were made with officials at Pennsylvania State College, with Dr. Bennett, and with graduate students. On January 28, Mr. Couch showed motion pictures on the big-game situation in the United States and addressed 300 members of the Montgomery County Forestry, Fish, and Game Association at their annual meeting at Norristown, Pa. This organization is one of the oldest sportsmen's groups in the country.

Appointed Assistant Leader of Unit.--Dr. P. F. English, professor of wildlife management at Pennsylvania State College, was appointed collaborator of this Bureau on April 1. He will conduct cooperative research projects as part of the Pennsylvania Cooperative Wildlife Research Unit program and will assist Dr. Bennett in the administration of the unit, acting in the capacity of assistant leader.

Addresses Ornithologists.--Dr. Harry C. Oberholser spoke before the Potomac Garden Club at Shepherdstown, W. Va., on "Saving America's Outdoors," on February 8. He also addressed the Virginia Society of Ornithology at its ninth annual meeting, held in Norfolk, Va., on February 17. In the afternoon his subject was "Waterfowl Sanctuaries in Virginia and North Carolina," and that evening he spoke on "Waterfowl of America."

Study Deer Weights and Measurements.--Clarence M. Aldous, leader of the Maine Cooperative Wildlife Research Unit, reports that in January the cards with the field data on deer collected at 10 checking stations were assembled and summarized by Professor D. B. Demeritt and some of the graduate students. It was found that the noticeable decrease both in weight and height of a year ago did not remain stationary and did show that the weight and height of both male and female deer tended to return more nearly to those obtained in 1936. Little difference is seen between the deer from the various parts of the State.

Mass Planting Effective in Ohio.--Experience indicates it is not advisable to release ring-necked pheasants in lots of less than 12, according to Daniel L. Leedy, of the Ohio Cooperative Wildlife Research Unit. Groups of 50 or more a plant are more likely to produce definite measurable results, he reports. Where the potential productiveness of the new range is reasonably certain, mass plantings are most promising. In 1933, the



Perrysburg Township Refuge of Wood County was established to serve a locality that then had very little breeding stock. After a mass planting of 200 birds the refuge population on the 5 succeeding winters increased to 45, 700, 900, 1,100, and 1,400 birds. Already more than a thousand surplus birds have been trapped and distributed. This increase made possible the organization of a large and successful township-controlled hunting association. In 1937, permit holders of this association took an average bag of 6.1 pheasants each during 22 hours of hunting.

Collects New Flea.--While studying the mammals of Iowa, Thomas G. Scott, leader of the Iowa Cooperative Wildlife Research Unit, collected several specimens of mammalian parasites. Among these was a new species of flea, taken from a deer mouse Peromyscus leucopus noveboracensis, and recently described under the name Peromyscopsylla scotti by Irving Fox, in a paper entitled, "New species and a new genus of Nearctic Siphonaptera," Proc. Entomological Soc., Washington, vol. 41, No. 2, Feb. 1939.

Game Management on Farm Lands.--Nils N. Nilsson and E. A. Danielson, graduate students working on game management on farm lands in Oregon, report that the census taken this winter on the experimental area was encouraging, showing an increase in the number of game birds as compared with 3 years ago, when only a few could be found. Mr. Nilsson and Mr. Danielson report that the winter population is excellent, with the valley quail and the Chinese pheasants responding abundantly and the ruffed grouse showing an encouraging increase. Management of the bobwhite quail, however, seems difficult, but it is hoped that in time it can be definitely determined whether the birds ranging habits discourage management on definite units of ground or whether there are other limiting factors within management areas.

A Comparison of the First Census on the Experimental Area  
in 1936 and the Last Census in February 1939

<u>Game bird</u>	<u>1936</u>	<u>1939</u>
	<u>Number</u>	<u>Number</u>
Bobwhite quail . . . . .	6	105
Valley quail . . . . .	64	328
Ruffed grouse . . . . .	11	36
Chinese pheasant . . . . .	1	172

Turkey Census in Wichita Mountains Wildlife Refuge.--Material for a turkey census on the Wichita Mountains Wildlife Refuge, Comanche County, Okla., was collected from September 1938 through January 1939. On February 1, 487 turkeys were on the refuge. The census was taken systematically by Frank B. McMurry, junior biologist, making a study of small game problems on the refuge. With the assistance of Earl Drummond, Mr. McMurray used more than 260 recorded observation in making the count.

The home range of the various flocks and the population of each are given below, the designation "(A)" indicating flocks known to range outside the home range and "(B)" those likely to: Little Medicine Creek (A), 29; Cedar Creek (A), 35; Graham Flat, 33; Sulphur Flat (B), 21; Pecan Springs (A), 27; Greenleaf Canyon (gobblers), 7; Cow Creek-Camp Boulder 40; Lower Cache Creek (A), 25; 839 CCC Camp, 48; Headquarters, 80; Osage Orange Planting (A), 29; Medicinebluff Creek (A), 35; Head of Cache Creek, 21; Boggy Hollow (B), 24; Hollis Canyon (A), 12; Antelope Flat, 21; Total 487.

The flocks marked "B" are likely to range outside onto private land or the military reservation, as they are located on the periphery of the refuge. A whole flock may not do so, but small groups occasionally range outside the refuge to feed, usually returning in the evening to roost.

Studies Fur-Bearers in Northwest.--Dr. Victor B. Scheffer, stationed at the University of Washington, in Seattle, reports that 13 days in January were spent in the eastern part of the State in the valleys of the Chelan, Entiat, Wenatchee, and Yakima Rivers. Dr. Scheffer spent a week with a local trapper in setting and running marten traps, and for 6 days interviewed old-timers and local trappers regarding abundance and distribution of fur-bearing animals. Several skulls and skins were secured.

Film Strip on Beaver Released.--A film strip on "Soil and Water Conservation by the Beaver," by Dr. Scheffer, has been prepared and released by the Extension Service through the Bureau's Section of Current and Visual Education.

The films consist of 48 frames that picture the life history, habits, and economic relations of the beaver with particular reference to farm and forest lands. Methods of establishing new colonies by live-trapping and transplanting are illustrated. This film strip is based on long-time investigations by men in the Biological Survey and was prepared cooperatively by the Bureau and Extension Service. Complete lecture notes explain the story of each picture and make the film strip suitable for use before farm groups, sportsmen's meetings, nature clubs, CCC camps, and educational groups.

Begin Cooperative Study on Texas Bighorn.--A cooperative study of the Texas bighorn sheep in the Guadalupe Mountains of New Mexico and Arizona has been approved by Secretary H. A. Wallace and was made effective February 16. Four agencies have entered into agreement to contribute financially to this study: the Texas Game, Fish, and Oyster Commission; New Mexico Game and Fish Commission; United States Forest Service; and the Biological Survey.

Two investigators, Robert J. Snow and Earl Zimmerman, as agents in the Section of Wildlife Surveys, have been employed to study the limiting factors working against the increase of bighorns. Weight will be given to predation, poaching, diseases, parasites, and other factors. Studies will also be made of numbers, distribution, food habits, breeding, live-stock relationships, and competition with other game animals. A general

range reconnaissance will be made in the Guadalupe Mountains of both States. The study will attempt to obtain information that will assist in developing management plans for improving the status of this species. The population of the Texas bighorn, despite State closures from hunting, has been steadily declining and is threatened with extirpation over much of its former range.

Texas Extension Service Does Big Job.--The extent of the wildlife conservation work under the Texas Extension Service was shown in a report for 1938 by R. E. Callender, game management specialist, Texas Extension Service, College Station. The report included the following information: About 17,000,000 acres of Texas lands, in 1,250 separate blocks, are under the game management demonstration program of the A. and M. College. The blocks range in size from a few to more than 500,000 acres. Of the 254 counties in Texas, 185 have at least one cooperative game preserve. A total of 40,000 signs have been used to mark these regulated hunting areas. Landowners cooperating number 15,333. More than a million fish were placed in 844 ponds (8,400 acres in area) and 9,477 acres of lakes during 1938. Many of the areas were thrown open to hunting and fishing on a regulated basis, and county agents' reports show that landowners received \$227,900 for hunting leases and \$3,320 for fishing leases during the year. Demonstration participants in 15 counties derived \$34,149 from furs. During 1938, 133 game-management areas containing 69,564 acres were operated by 4H Club boys.

Visit Mammal Laboratory.--Visitors who have utilized the mammal laboratory for study of specimens and records or to obtain information through conferences include the following: In January, Vernon Bailey, E. A. Preble, and Dr. T. S. Palmer, retired Bureau employees, all of Washington, D.C.; L. Baumgartner, Ohio Wildlife Research Unit, Ohio State University, Columbus, Ohio; L. C. Whitehead, district agent, Rodent Control, Region 7, Raleigh, N.C.; and Lorin T. Oldroyd, Experiment Station director and dean of the College of Mines and Agriculture of Alaska, Fairbanks, Alaska. In February, John P. Holman, Fairfield, Conn.; Douglas Gray, Alaska Game Commission, Juneau, Alaska; Frank Dufresne, regional director and executive officer, Alaska Game Commission, Juneau, Alaska; and C. C. Sanborn, Field Museum of Natural History, Chicago, Ill. In March, Kenneth Witmyer, assistant sales manager, Animal Trap Company of America, Lititz, Pa.; Clarence Birdseye, Gloucester, Mass.; Carl J. Lomen, Nome, Alaska; J. K. Douth, Carnegie Museum, Pittsburgh, Pa.; Dr. and Mrs. Wendell S. Chapman, Berkeley, Calif.; and Vernon Bailey, Washington, D.C.

Mr. and Mrs. John D. Thees, of New Rochelle, N.Y., visited the laboratory to see a bear skull, now in the Biological Survey collection, that Mr. Thees collected on Kenai Peninsula, Alaska, in 1914.

Joe Wilson, Sochchun, Korea, a student at Davidson College, Davidson, N.C., called at the laboratory on March 27 to inquire about mammalogy technique and the possibility of accompanying a Bureau mammalogist on a field trip. Mr. Wilson later will return to Korea and make a study collection of Korean mammals.



Food Habits Research

Attends Mosquito Control Meeting.--Dr. Clarence Cottam attended the annual meeting of the 1939 New Jersey Mosquito Extermination Association held in Atlantic City March 22, 23, and 24. A number of speakers condemned the Biological Survey and others for urging that biological control be used wherever possible in the control of mosquitoes. It was gratifying, however, says Dr. Cottam, to note that other speakers referred to the value of killifish, top minnows, sun fish, and chub as effective control enemies of mosquitoes.

T.V.A. Policies Discussed.--On February 28, Mr. Salyer and Dr. Cottam, representing the Bureau, met with T.V.A. officials at Knoxville to discuss and establish policies correlating malarial control with wildlife conservation. A lengthy report on the result of inspections of this area by both the Biological Survey and the Bureau of Fisheries has been prepared.

After the conference, Mr. Salyer and Dr. Cottam inspected waterfowl areas and studied wildlife problems in the Tennessee Valley watershed.

Birds Electrocute Themselves.--During the past few months the Rural Electrification Administration and private companies engaged in rural electrification work have requested information and assistance in keeping birds from roosting on transformers, insulators, and other electrical apparatus. Not only do many birds electrocute themselves, but they also cause a "short" in the electrical apparatus. This situation is inconvenient and costly because the power must be shut off.

Experiments are being conducted by the Bureau in cooperation with the Rural Electrification Administration and private companies to determine the degree of slope of a flat surface on which starlings and other birds will perch. It has been found that no starling has attempted to perch on a surface with a 37 1/2 degree slope. Starlings probably will not perch on slopes greater than 30 degrees unless there is a projection that provides a brace or is small enough for the birds to grasp with their feet.

Aids in Water Caltrop Studies.--F. M. Uhler, of the Foods Habits staff, is cooperating with District of Columbia engineers in a study of large-scale methods of controlling the water caltrop (*Trapa natans*). An Eurasian aquatic plant that has become a menace to shallow-water navigation in the fresh-water portion of the tidal Potomac, the caltrop has destroyed large areas of valuable waterfowl feeding grounds in that locality. Cooperation is also being extended to the Izaak Walton League in its efforts to launch a program of local control of this pest plant to prevent its further spread in areas that are not already choked by it.

Surveys Proposed Texas Refuges.--Neil Hotchkiss left Washington, D. C., on February 13 for Brownsville, Tex., to inspect proposed refuge areas in Cameron and adjacent counties. He also made a survey of the waterfowl areas in that State.

Enroute, Mr. Hotchkiss conferred with officials at Knoxville, Tenn., on wildlife problems in the Cumberland-Tennessee Basin.

Detailed to Laboratory.--February 3 Thomas Z. Atkeson, of the Alabama Cooperative Wildlife Research Unit, reported to the Food Habits laboratory to continue cooperative food habits studies of various animals. He spent a month at this work.

Studies Waterfowl Foods Along the Gulf Coast.--During February John J. Lynch conducted further waterfowl food studies along the Gulf Coast. In studies of plant association, base levels were established to measure the depths and inundations of the various plant zones. Important observations were made on the disintegration of marsh areas in the reverting fresh marshes of the Delta.

Food habit studies were made of the blue and snow geese on the Delta. Evidence indicates that in addition to their feeding on the rhizomes of the three-square, these birds also feed on saltmarsh cordgrass, giant cutgrass and, to some extent, on cattails. Stomachs were collected, and laboratory examinations will be made.

Mr. Lynch also surveyed the Mississippi Sound, attempting to locate important waterfowl concentrations and their feeding beds. Aiding in making a more effective survey of the areas, the United States Coast Guard Air Base at Biloxi furnished planes.

Geese Eat Alligatorweed.--Canada geese on the Delta Migratory Waterfowl Refuge, La., were seen in January feeding on new growth of alligatorweed (Alternanthera philoxeroid), according to Mr. Lynch. This plant heretofore has been considered to be wholly undesirable in a waterfowl habitat. Mr. Lynch's field observation was confirmed by a careful examination of droppings. Observations will be continued to determine whether or not this use of alligatorweed is habitual.

Observes Concentration of Blue and Snow Geese.--During flights made for the annual waterfowl inventory, Mr. Lynch saw several thousand blue and snow geese on the St. Bernard Parish marshes, about 25 miles from the Delta Refuge, a locality where they are said to occur ordinarily in small numbers only.

Interesting also was the observation of a considerable raft of redheads in Cat Island Sound, Miss. The stomach of one redhead from this area was examined and found to contain a large quantity of Halodule wrightii, a marine aquatic plant that is exceedingly abundant in many places on the Texas and Florida coasts. It has been thought for some time that this was an important food plant, but confirmation through stomach examination has only recently become available.

Drought Increases Depredations.--During February, Johnson A. Neff, of Sacramento, Calif., studied bird depredations in agricultural areas of that State. Because of the unusual drought in California last winter, birds were concentrated in these areas and were responsible for severe depredations.

Investigates Damage to Fruit Crops.--Mr. Neff visited San Joaquin County during March to inspect areas where linnet damage to fruits at ripening season is an annual event. In one cherry orchard the ground was found well covered with cherry blossoms that had been snipped off by a moderate population of linnets and a large population of green-backed goldfinches. Many of the blossoms that had been dropped by the birds showed that they had cut the stems. An average of about one-fourth inch of stem remained on the blossom. Other blossoms showed the typical destruction of the embryo fruit by the birds. Because the blossoming of the cherries was exceptionally abundant, no commercial damage had been done this year. Had the blooms been less profuse, however, severe damage could have resulted. On one ranch, fruit losses on the free-stone peaches are said to be approximately 50 percent.

Claim Ravens Raided Grain Fields.--Last December, Mr. Kalmbach was called to Kit Carson, Colo., to inspect alleged damages by white-necked ravens. Complaints had been received that 2,000 of these birds were roosting in the area, but no appraisal of the damage could be made because most of the grain crops had been removed from the fields. Several specimens were collected for study.

Work of Bureau Discussed.--On February 18, immediately following the Wildlife Conference, Mr. Kalmbach gave an informal talk on the work of the Survey to interested wildlife groups in Grand Rapids, Mich.

Studies Duck Depredations.--Ralph Imbler of the Denver Food Habits Laboratory spent January 26 and 27 in northeastern Colorado assisting in making appraisal of damage by ducks to grain crops.

Summarizes Waterfowl Nesting Studies.--Approximately 600 nests on the Malheur Refuge, Oreg., were under the observation of Clarence A. Sooter last summer. During February Mr. Sooter conducted food habit studies in the Denver Laboratory and summarized the waterfowl nesting data he had recorded. During the summer Mr. Sooter had 309 goose nests and 344 duck nests under observation. It was estimated that approximately 1,500 pairs of geese nested on the refuge. Mallards, gadwalls, cinnamon teal, and pintails were the most abundant. Hatching success of ducks ranged from 50 to 68 percent, with an average of 59 percent, while the geese were 55 percent successful.

Predation was the main factor in the loss of ducks, geese, and sand-hill crane nests. Ravens and coyotes were the most serious enemies, but crows, magpies, and skunks also caused some loss.

Meadow grasses, woods, and hardstem bulrush were the types of cover preferred by the majority of the nesting ducks. The geese showed a marked preference for hardstem bulrush.

Surveys Wintering Ducks and Their Food.--Waterfowl food conditions in northern Utah were studied by Cecil S. Williams during February. Some 25,000



birds wintered in that part of the State, Mr. Williams reported. During prolonged periods of severe freezes and deep snows the birds may face starvation unless help is rendered, he said. During such times they attack farmers' crops and may cause considerable damage. As aquatic foods become scarcer, the birds invade cattle feed yards and grain stacks. Similar conditions may be expected, Mr. Williams stated, during any winter when severe freezes and heavy snows last more than 6 weeks. He also reported that by the end of February northward migration had begun. Canada and snow geese, scaups, coots, and a few surface feeders were beginning to arrive at that time.

Virginia Commission Lends Quails.--The Bureau of Biological Survey, through the splendid cooperation of the Virginia Fish and Game Commission, recently obtained 50 pairs of bobwhite quail for use in nutritional studies at the Patuxent Refuge, Md. These birds were presented as a loan with the understanding that within a year an equal number of birds were to be returned to the commission.

#### Distribution and Migration of Birds

Annual Meeting of Eastern Bird Banding Association.--On February 25, Mr. Lincoln attended the annual meeting of the Eastern Bird Banding Association at the Academy of Natural Sciences in Philadelphia, Pa. In his contribution to the program he reviewed the history of the banding work, set forth the Bureau's concept of the reasons for the existence of the regional associations, outlined the opportunities for individual and group study by this method, and issued a challenge to bring additional bird groups under the influence of the scheme. The meeting had an attendance of about 60 persons, which Mr. Lincoln considers remarkable evidence of the rejuvenation of this association under its present corps of officers. In the past he attended many of its annual meetings in New York City and Philadelphia, when 12 to 15 persons would constitute an audience.

In addition to an excellent program in the lecture hall, an exhibit had been prepared in an adjoining room. Featured were several well-designed traps, ornithological books obtainable through the association, samples of desirable local publicity, photographs, and a display showing a series of healed fractures of bird bones.

The annual dinner was held at Holland's Restaurant with about 40 members present. The toastmaster again called upon Mr. Lincoln, who took the opportunity to sum up and comment upon the afternoon program.

Aerial Photography Aids Inventory.--The value of aerial photography in determining the numerical size of a concentration of ducks was again demonstrated on February 2 by E. R. Kalmbach, of the Denver Laboratory of the Food Habits Section, and U. S. Game Management Agent F. F. Poley, in cooperation with the U. S. Army Air Corps Technical School. This method was tested several years ago on the Potomac River below Washington with a photographic plane from Bolling Field and more recently by Regional Director Roy Moore at

Catahoula Lake, La., with Army Air Corps equipment from Barksdale Field.

The Colorado tests were made at Barr Lake, some 20 miles northeast of Denver. Successive photographs of the duck concentration, made at 1,200 foot elevation, proved satisfactory, as they did not overlap their images, causing gaps between frames. The speed of the plane produced a slight blurring, which Mr. Kalmbach believes might be eliminated or at least reduced if the photographs were taken at 1,500 feet. The count was made through the use of a microscope on a swinging arm, the process being facilitated by concealing, with two masks, all but a narrow strip of the photograph.

An interesting feature of this test, and one which may be considered indicative of the conservative nature of the estimates of observers, is the fact that Mr. Kalmbach and Agent Poley made a ground appraisal at the same time the photographs were taken. They found that their estimates were only slightly more than half the actual number revealed by the photographs. This obvious discrepancy does not, of course, have any adverse affect upon the January inventory figures, provided the method employed on each area is the same and is done each year by the same observers, because the value of the inventory is to show trends rather than numbers. For this reason the term "census" should not be used in this connection.

Activities of Atlantic Flyway Biologist.--The waterfowl refuges along the Atlantic coast were visited in February by Harold S. Peters, Atlantic Flyway biologist, who conferred with refuge managers and others regarding waterfowl conditions. Mr. Peters visited the Mattamuskeet, Pea Island, Back Bay, Blackwater, and Bombay Hook refuges. On his return trip to headquarters at Charleston, S. C., he spent 2 days at the Washington office conferring with Mr. Lincoln on various phases of his work and making tentative plans for further summer investigations in the Maritime Province.

On March 2 Mr. Peters visited the Savannah River Refuge, Ga., and then went to Jacksonville, St. Augustine, Daytona Beach, Deland, and Orlando, Fla., stopping often enroute to observe waterfowl conditions. On March 4 he attended the annual meeting of the Florida Audubon Society at Rollins College in Winter Park. From March 5 to 11 further investigations were made in Florida. At Lake Okeechobee, where many waterfowl were seen, an aerial survey was made. Mr. Peters took an all-day trip by boat into the Great White Heron Refuge, Fla., on March 10. In one week he had covered 1,250 miles.

Activities of Mississippi Flyway Biologist.--During January and February C. E. Gillham, the Mississippi Flyway biologist, has worked rather close to headquarters, being engaged primarily in the preparation of a report on waterfowl conditions in his flyway. On February 13 he addressed the Alton, Ill., Sportsmen's Club, giving an informal talk on general waterfowl conditions.

Activities of Central Flyway Biologist.--Dr. George B. Saunders, the Central Flyway biologist, has completed his waterfowl investigations in Mexico. Field investigations were made north and south of Tampico. Prior

to this work Dr. Saunders made an aerial reconnaissance on the eastern coast of Mexico from the Rio Grande to the northeastern tip of the Yucatan Peninsula. From observations made during this trip Dr. Saunders is convinced that the Gulf Coast has the following five important districts, which justify detailed study in future winters: Yucatan (narrow coastal lagoons and marshes around peninsula), Tamaulipas (Tampico Lagoons), Tamaulpias (coastal lagoons), Vera Cruz (Laguna de Tamiahua), and Vera Cruz (Tlacotalpan area).

Activities of Pacific Flyway Biologist.--Luther J. Goldman, the Pacific Flyway biologist, completed his waterfowl investigations in western and southern Mexico and returned to his headquarters at Berkeley, Calif. On his trip to Torreon he traveled by car on an old wagon road through the desert and mountains. The Mexicans were amazed that he made the trip alone, as they rarely drive out of town in that locality without a "helper." Mr. Goldman went to Alaska on April 1 to conduct waterfowl investigations.

Addresses Fish and Game Association.--Mr. Lincoln addressed the Camden County Fish and Game Association at Camden, N. J., on March 2, on the work of the Bureau. Because it was believed that the majority of the members of this organization thought of the Bureau only as an agency that enforces waterfowl regulations, Mr. Lincoln went into detail on the other activities of the Survey, treating the subject by divisions. About 400 members of the association were present.

New Book on Bird Migration in Press.--A work entitled "Migration of American Birds," prepared by Mr. Lincoln, is now in press and will be issued in book form this spring by Doubleday Doran Company. The book will contain a summation of the present knowledge of migration, 12 colored plates, and about 20 maps, some of the latter having appeared in Department publications.

Banded Bird in "Pen".--A guard at the Oregon State Penitentiary wrote the following letter during the past shooting season: "As a general rule inmates upon commitment to our institution are assigned a number after their entrance, but an incident occurred this morning whereby our count was enlarged by one scaup duck, who already had a number upon arrival. The duck was found this morning (November 30, 1938) inside the walls and appeared to be wounded. Upon examination, I found attached to his leg a metal band which reads as follows: 'Notify Biological Survey, Washington, D.C. 36-739406.' The bird was a redhead banded at the Malheur Migratory Waterfowl Refuge, Burns, Oreg., on August 31, 1938.

Traps 300 Birds Overnight.--In one night, 313 black vultures were caught in a trap set by E. A. McIlhenny, Avery Island, La., who each year bands many of these birds. Of this group, which was trapped on February 8, 97 were returns of vultures he previously had banded. During the last fiscal year, Mr. McIlhenny tagged more than 2,800 birds.



Interesting Returns from Banded Birds.--The following are returns of outstanding interest from banded birds, showing band number, place, and date of banding, and place and date of recovery:

## Franklin gull:

38-537758, S.Dak., Columbia, 7/12/38      Guatemala, San Jose, 12/11/38

## Caspian tern:

34-525080, Mich., Shoe Is., 7/7/34      Colombia, Soledad, 1/10/39

## Common tern:

A335287, Mass., Eastham, 7/2/29      Brazil, Para, 1/16/39

## White pelican:

A716---, Wyo., Yellowstone Park, 7/12/32      Nebr., Madison Co., 10/16/38  
(last three figures of number illegible)

## Pintail:

34-552486, La., Avery Island, shipped to  
Berkeley, Calif., where released  
2/4/35      La., Lake Providence, 12/22/38

34-552741, La., Avery Island, shipped to  
Cambridge, Md., where released  
2/21/35      Tex., Taylor's Bayou, 12/17/38

## Wood ibis:

36-723890, Fla., Cape Sable, 3/18/38      Ga., Sylvania, 6/30/38

## Woodcock:

34-418313, La., Sherburne, 1/7/37      N. S., Kings Co., 10/22/38

## Red-shouldered hawk:

C612964, Del., Dover, 5/30/31      Md., Salisbury, 10/17/38

## Osprey:

38-804157, N.J., Cape May Co., 7/7/38      Puerto Rico, Juana Diaz, 10/17/38

## Yellow-headed blackbird:

38-204290, N.Dak., Kenmare, 7/25/38      Mexico, Jalisco, Mazatepec, 11/16/38  
38-236723, S.Dak., Columbia, 7/30/38      "      Michoacan, Morelia, 11/4/38

## Song sparrow:

34-117573, Mass., North Eastham, 9/7/35      Va., Langley Field, 2/11/39

Interesting Foreign Return.--The following information has been reported to the Biological Survey by the National Parks Bureau, Department of Mines and Resources, Ottawa, Ontario: An Atlantic Kittiwake, No. 51412 of the Central Bureau of Birdringing, Moscow, banded June 19, 1937, on the Island of Kharlov, Barents Sea, off the coast of Murmansk Bereg in northern Russia, adjoining Finland, was shot September 20, 1937, near little Fogo Island, Newfoundland, by William Dwyer.

### Fur Resources

Appears as Witness.--During a recent visit to New York, Frank G. Ashbrook discussed with officials of the Division of Customs, Department of Justice, the Chinese dog-skin case that was recently tried in New York City and in which he appeared as witness. The case has been appealed and will be tried in the Court of Customs and Patent Appeals in Washington next fall. He also served on a board of experts in a fur quiz held at the Fur Merchants' Club in New York City on Monday, March 6. The quiz was similar to one of the well-known radio quiz programs.

Examine Experimental Pelts.--Mr. Ashbrook, Charles F. Bassett, and Charles E. Kellogg met in New York City, January 25 to 27, to confer with experts in the fur trade on all the experimental pelts produced at the Fur Animal Experiment Station, Saratoga Springs, N. Y., last year. This expert opinion on the effect of experimental rations in the production of commercial furs proves invaluable in interpreting the effect of various feeds on fur growth. Mr. Ashbrook and Mr. Kellogg also met officials of the Cavanagh Hat Research Corporation and discussed additional research work to be done on species of North American fur animals that possibly can be utilized to insure a home supply of hat-fur.

Talks to Penn State Alumnae.--At a meeting of the Penn State Alumnae Association of Washington, D. C., held February 28 in the home of a member, Mr. Ashbrook discussed the importance of North American fur animals as a natural resource. He described the work that the Bureau is doing in the production and conservation of fur animals and illustrated his talk with specimens of fur pelts. About 25 men and women attended the meeting.

Research Projects Visited.--From April 11 to April 21, Charles E. Kellogg visited various research projects on fur animals in New York and Pennsylvania. En route he stopped at several of the more important mink and fox farms.

From April 12 to April 15, Mr. Bassett, director of the U. S. Fur Animal Experiment Station, and Mr. Kellogg outlined the experimental work on minks and foxes to be conducted this summer and next fall. An inspection also was made of the intensive reconstruction work now in progress at the Station.

On April 15 Mr. Bassett accompanied Mr. Kellogg on a trip to Cornell University to review the metabolism research work conducted on minks and foxes at that institution in cooperation with the Bureau of Biological Survey under a grant from the Secretary's Special Research Fund. En route to Cornell they stopped at the Montezuma Marsh Refuge and conferred with Morton Radway, superintendent of the refuge. Later Mr. Kellogg went to State College, Pa., where he conferred with Dr. E. B. Forbes, who had just completed some metabolism studies with domestic rabbits. Dr. Forbes has obtained digestible coefficients on numerous feeds that are commonly used in the feeding of rabbits. (See story page 66.)

Mr. Kellogg spent April 20 with Dr. Robert K. Enders at Swarthmore College, discussing the embryological work that is being done with minks at that institution under a grant from the Secretary's Special Research Fund. That evening they attended a banquet given in honor of Dr. Augustus Krogh, Professor of Physiology at the University of Copenhagen and a Nobel prize winner in physiology and medicine in 1920. After the banquet they attended the last of a series of lectures for which Dr. Krogh was specifically brought to this country by Swarthmore College.

Attends Meeting of Anatomists.--Dr. Enders attended the meeting of the American Association of Anatomists, Harvard Medical School, Boston, Mass., April 6 to 8. While there he conferred with many of his former students at Swarthmore who are now working towards a doctor's degree in similar lines at Harvard University and at other nearby universities. Many of the scientific papers read at the meeting treated subjects directly applicable to Dr. Enders'

investigations. He intends to devote considerable time next year to studying the male mink as well as silver foxes.

Red Fox Eats Muskrat.---Last August, when the water on the marshes was extremely low and the breeding season of the muskrat at its height, red foxes apparently were destroying many of these rodents. An analysis of the stomach contents of four red foxes, which was made by the Section of Food Habits Research indicates that the foxes do feed on muskrats to a considerable extent during the breeding period.

Metabolism Study on Minks Under Way.---Digestion studies on minks were started on January 4 under the direction of J. K. Loosli, in charge of the cooperative research on the metabolism of fur animals, Cornell University, Ithaca, N. Y. Balance experiments have already been completed for four dietary combinations. A study is also being made on the digestion of starch by minks, and it is planned to include in this phase of the work studies of purified raw starch and starch as it occurs in the common cereals used by fur animals. Six yearling male minks were placed on a low vitamin-A diet on January 28 after X-ray pictures had been taken in an attempt to determine the presence or absence of bladder stones or other pathological calcium deposits.

In February, Dr. Loosli reported on some of the results of these experiments. Lamp black was included in the feed given to minks and was recovered in their feces. A white marker, barium sulphate, was also used. In the above tests, from 3 1/2 to 4 hours elapsed from the time of feeding to the time the material was first eliminated. The food residues had all been evacuated within 13 to 15 hours after feeding. In cooperation with Dr. LeRoy Barnes, physicist at Cornell University, X-ray photographs were made, at definite intervals, of mink that had been fed a diet including barium sulphate.

The movement of food through the digestive tract was slower when the X-ray study was made. This was probably caused by the excitement due to frequent handling. These two studies indicate that a 24-hour period is sufficient to allow minks to completely digest meat. Work on the digestibility of the common mink foods was continued throughout February.

Polygamous Mating of Foxes Satisfactory.---This year 10 vixens were mated to one male fox, and 9 vixens to another, Charles F. Bassett, director, U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., reports. All together 10 males were mated to 45 vixens. The use of polygamous males permits the breeder to distribute the good qualities of superior animals more quickly to the entire herd.

Visits Fur-Animal Station.---L. T. Oldroyd, director of the Experiment Station at Fairbanks, Alaska, visited the U. S. Fur Animal Experiment Station. He was especially interested in the equipment and type of experimental work that is being done with fur animals, because a fur animal experiment station was established in Alaska last fall. Before returning to Alaska Mr. Oldroyd visited officials in the Washington office to obtain further information on fur animals.



Provide Sample Feeds for Rabbit Tests.--A list of 47 feeds that will be used in digestive-coefficient and metabolizable-energy tests on rabbits was given to the Pennsylvania State College by the U. S. Rabbit Experiment Station, Fontana, Calif. Many of these feeds were supplied directly by the station, Director George S. Templeton said. The Bureau is fortunate in being able to assist Dr. E. B. Forbes, in charge of the Institute of Nutrition, who is conducting the experiments. A feed standard for rabbits, based entirely on digestive trials on the animals themselves, will give much more accurate information than could be obtained by adapting a feeding standard for other domestic animals.

Use Oil Cans for Self-feeders.--Several different designs of a self-feeder adapted for rabbits were made of 5-gallon oil cans at the Rabbit Experiment Station in January, Mr. Templeton said. Some of these designs are simple to construct, are inexpensive, and appear practicable. The feeders will be tested thoroughly and studied carefully for further improvement.

Test Palatability of Pigeon Peas.--Before advising farmers to increase acreage on pigeon peas next season, the Rabbit Station is conducting experiments to determine the feeding value of this crop. J. T. Peterson, of the Agricultural Extension Service at Sacramento, Calif., furnished the station with samples of the plant, Mr. Templeton reported. Pigeon peas were given to the rabbits in the self-feeder developed by the Rabbit Station's staff. Continued for 8 days, this preliminary test showed that the pigeon pea was not as palatable as any of the common cereal grains.

Addresses Poultry Specialists.--On February 24, Mr. Templeton was the guest of a group of extension workers, veterinarians, commercial hatchery operators, farm magazine editors, and other poultry specialist. While in Los Angeles he made a survey of the rabbit meat market and found that the stores in that vicinity preferred selling rabbit carcasses entire rather than cut into pieces and displayed in a carton.

Future Fur Farmers Visit Station.--On January 9 and 17, Professor M. A. Kiff, of the San Bernardino high school, and a class of 22 Future Farmers of America visited the Rabbit Station to inspect the equipment and receive special instruction on rabbit raising. Mr. Templeton and Allen Suitor, superintendent of the Station, gave the class instructions on the feeding and selecting of rabbits generally used for the commercial production of fur and meat. Forty-three future farmers spent an hour at the Station on Saturday, March 25, inspecting the equipment. Mr. Templeton explained the various phases and the extent of the rabbit industry. Many of the boys are raising rabbits and seemed keenly interested in feeding and management problems.

Field Day to be Held May 21.--The Annual Field Day for all rabbit breeders in the southern part of California will be held at the Fontana (Calif.) high school auditorium on May 21. The program will include a round-table discussion of rabbit problems. Mr. Templeton will have charge of the program on the breed-

ing, feeding, and management sessions. Dr. E. L. Vail, of the Section of Disease Control, will preside at the sessions discussing diseases. The Rabbit Experiment Station will be open to visitors in the afternoon.

Lespedeza Sericea Tested for Palatability.--Studies on the palatability of Lespedeza sericea indicate that rabbits do not relish this type of lespedeza, according to Mr. Templeton. Lespedeza sericea is a perennial type that is grown for hay in the southeastern States and seems to be adequate for cattle. Professor F. W. Burns, of Auburn, Ala., cooperated in this study by shipping a sample of this hay to the rabbit station. The work demonstrates the intensiveness of the research program at the rabbit station for the benefit of rabbit breeders in all parts of the United States.

Indians Visit Station.--Thirty-five Indian girls from the 11th grade of the Sherman Institute, Riverside, Calif., visited the Rabbit Station on February 24. Mr. Suitor explained the methods used in the feeding and caring of rabbits.

Muskrat Catch Only Fair.--The catch of muskrats so far this year has been rather sporadic and the number caught only fair, it was reported by Herbert L. Dozier, director, U. S. Fur Animal Field Station, Blackwater Refuge, Cambridge, Md. The best trapping has been during heavy snowfalls or misty, foggy nights. Dr. Dozier also reports that the muskrats from certain areas this year are carrying more external parasites than at any time during recent years.

Muskrat Skinning Contest Held.--The first muskrat skinning contest ever held was conducted before a capacity audience of farmers in a Cambridge, Md., theater on February 21. The contest followed an address by Dr. Dozier during the Annual Farmers' Day Meeting. Eight of the fastest muskrat skimmers on the Eastern Shore of Maryland participated in the affair, which received favorable comment by the Associated Press and other agencies. The winner removed the pelts from five muskrats in 3 minutes and 3/5th seconds. Some of the competitors removed five pelts in quicker time, but were disqualified because of tears in the pelts. This contest brought out a remarkable number of different methods of skinning a muskrat. One expert, blind-folded, skinned a muskrat perfectly in 56 seconds. Dr. Dozier, who was chairman of the judging committee, said that this contest probably will become an annual affair, open to all applicants.

Nutria Born at Field Station.--A pair of young nutria (coypu) was purchased by the Bureau last fall for experimental study at the Fur Animal Field Station. On March 3 a litter of five was born, 4 of which are still alive, and Dr. Dozier reports that they are growing nicely. The nutria seem to enjoy sharpening their teeth and gnawing on half-decayed logs. At one time these animals were common in South America, but because of overtrapping the supply at present is limited. Nutria fur, which is similar to that of the beaver, is selling at good prices in the fur trade.

Leg Banding Results.--Attempts at the Fur Animal Field Station to use aluminum duck bands on the rear leg of the muskrat appeared to have failed because of irritation and rubbing. The single exception was a black female banded last September. This animal remained in excellent condition but was killed in December by an owl. The black enamel used to bring out the number on the band wore well and was distinct after 3 months in mud and water.

Reports on Fur-animal Fiber Study.--Dr. Thora M. Plitt, the Bureau official who is working on a study of the structure of fur-animal fibers at the National Agricultural Research Center, Beltsville, Md., reported recently that about two dozen media for mounting fox fur fibers had been tested and four selected to be used for temporary and permanent mounts both with similar and dissimilar refractive indices. Sections of raccoon and opossum skin with the hair attached were made to complete the series for the examination of texture of pelts now on hand.

Talks to Mink Breeders.--Dr. Enders addressed a meeting of the United States Mink Breeders Association, which was held in Chicago, Ill., on February 13. He spoke on the investigations being conducted on the reproduction of the mink by the Bureau at Swarthmore College.

Uses Dogs in Field Work.--Using dogs trained for fur animals, Rollin H. Baker, field biologist, Texas Cooperative Wildlife Research Unit, checked burrows on the Barnard Prairie, 6 to 12 miles north of Eagle Lake. In 32 burrows, the Section of Wildlife Surveys reports, he found 8 striped skunks and 6 opossums. Eleven dens were located under dewberry and yaupon brush; the remainder were on knolls in the grassy prairie. Quail signs were present at 10 of the 11 dens excavated under brushy cover, indicating that fur animals and bobwhites frequently winter in the same territory. Evidence indicated that 4 of 10 mink burrows in a protected area were in use.

Deceased.--Joseph S. Mihalek, Jr., for several years an employee at the U. S. Fur Animal Field Station, died on Wednesday, April 5, after a brief illness from a streptococcus infection.

Mr. Mihalek had received a permanent appointment as keeper on December 1, 1938. His father, Joseph S. Mihalek, Sr., who had been employed at the station since 1924, died suddenly on December 21 from a heart attack. The father had been seriously ill since June 1938.

#### Disease Control

Investigates Mink Diseases.--Infectious diseases causing serious losses on several large mink ranches in Vermont were studied by W. H. Armstrong in January. The facilities of the Animal Pathology Laboratory at the State College at Montpelier were made available for his use. Through the cooperation of Dr. Ellis, of that institution, considerable quantities of vaccine were prepared and administered to the affected herds by Dr. Armstrong.



Surveys Fur Farms.---A survey of present conditions on fur farms in western Washington and Oregon was made recently by F. D. McKenney, stationed at the Veterinary College, at Pullman, Wash. Dr. McKenney plans to conduct his investigations of fur animal diseases at the State College of Washington.

Immunizes Silver Foxes.---Dr. Shillinger spent 2 days in January at Sellersville, Pa., conducting investigations on losses occurring among silver foxes in that vicinity. Provisions were made for immunizing the animals remaining on the ranches visited.

Addresses Livestock Association.---Dr. E. R. Quortrup attended the annual meeting of the Intermountain Livestock Sanitary Association, January 9 to 11 at Salt Lake City, Utah. Dr. Quortrup described the research work being conducted at the Bear River Migratory Refuge, Utah, and used motion pictures to illustrate his lecture.

#### FEDERAL AID IN WILDLIFE RESTORATION

Makes Field Trip.---Mr. Day left Washington February 21 for an extended trip through the south and southeast. He was accompanied by Roy F. Hendrickson, director of personnel, and Milton S. Eisenhower, coordinator of land-use planning, Office of the Secretary. He returned to Washington on April 12.

Inspects Utah Projects. --Guy W. Lane left Washington February 11 for Omaha, Nebr., Denver, Colo., and Salt Lake City, Utah, where he conferred with State and Bureau officials regarding Federal aid projects.

Restoring Turkey to Arizona.---A recent survey by the State Game and Fish Commission of Arizona indicates that environmental conditions on many areas lying within the boundaries of the Coronado and Crook National Forests are suitable for the production of wild turkeys. Although early records indicate that these ranges were formerly well stocked with the species, the birds are now practically extinct. The factors causing depletion in population, however, have been brought under control, and the commission proposes to live-trap birds from nearby areas and transfer them to suitable sites on the forests.

The restoration project was approved February 20, and the work will be done by the Game Commission with the cooperation of the Indian Service, U. S. Department of the Interior, the Forest Service, the Biological Survey, and local game protective associations.

Some observers say that present conditions are caused by depredations by natural enemies, especially when the birds are concentrated on their winter ranges; others say the decreases are due to over-shooting, scarcity of food, inadequate nesting environment, and to the activities of natural enemies in the summer ranges and during the period when the young are being reared. There is pressing need for more complete information on the migratory habits of these birds, which inhabit the high mountain areas in the summer and move down to concentrate in the snow-free lower altitudes during

the winter. A Federal Aid project that will provide continuous field contact with the birds was recently approved. The resultant observations are expected to furnish the information desired, which will in turn be translated into a much-needed long-range management program designed to increase this desirable wildlife species.

Lyndon L. Hargrave will act as project leader. The University of Arizona, the Forest Service, and the Biological Survey will cooperate with the State Fish and Game Department on this study.

Transplant Beavers in Colorado.--A preliminary estimate by the U. S. Forest Service indicates that there is sufficient suitable range in the higher aspen belts of Colorado to support 100,000 beavers, or more than double the number now found in the State. A carefully planned planting program would remove the animals from areas where they are now damaging irrigation ditches and fruit trees to localities where their dam-building and water-storing abilities will serve a useful purpose.

A State-wide program has been inaugurated under a Pittman-Robertson project to systematically transplant available live-trapped beavers to streams not now containing colonies. The objectives are the retention of water in high mountain basins, the catching of silt otherwise damaging to irrigation projects, the storing of reserve waters in the beaver ponds, the increase of aquatic life, the improvement of waterfowl nesting areas, and in many cases, the providing of additional livestock watering facilities. It is hoped that the plan of removing nuisance beavers to streams where they will do no damage to agriculture will again make it possible to realize a considerable income from the fur.

The initial part of the program consists of an extensive cooperative survey of existing colonies and the mapping of suitable areas.

Establish Seed-Stock Refuges in Delaware.--The Delaware Board of Fish and Game Commissioners has proposed that its apportionment of Federal Aid funds be used to expand the program of establishing, developing, and managing seed-stock refuges throughout the State. The scope of the planned work is such that the Federal apportionment is insufficient to permit reimbursement to the State of the allowable 75 percent of the project costs. However, to insure the successful accomplishment of the undertaking, the State will contribute more than the required 25 percent of the costs of the project, which was approved on March 21.

The plan calls for the establishment of 21 seed-stock refuges that will be leased by the State for a period of 6 years. These units, because of their wide dispersion, are expected to benefit all forms of wildlife indigenous to the State. The refuges will be developed according to the needs of the specific areas and will be closed to hunting until it is mutually agreed by the contracting parties that there is a surplus of game. Careful records will be kept to determine practical management technics.

Edwin M. Barry has been selected by the Delaware Board of Fish and Game Commissioners to direct the work. The Soil Conservation Service, U. S. Forest Service, National Youth Administration, American Wildlife Federation, Delaware

Game and Fish Protective Association, the State Department of Agriculture, the Agricultural Experiment Station, and the Biological Survey are cooperating in the project.

Florida Studies Wildlife Problems.--Studies in Florida wildlife problems will be expanded, the Florida Commission of Game and Fresh Water Fish announced, with the aid of Federal funds. Approval in March of a Federal Aid project was followed by the appointment of Roy Komarek to direct the program in that State. The broad objective of the program is to determine, so far as possible, how the wild lands of the State can be managed practically and economically so that they will produce a huntable surplus of game.

Mr. Komarek will select suitable lands to be used as wildlife refuge and study areas. He plans to spend one or more years developing the wildlife management technics best suited to these areas. At least five major units distributed in various parts of the State are planned in the program outlined.

Studies will be carried on to determine the extent of dog depredation on deer, the feasibility of using certain refuge areas to produce quail for release on hunting lands, and the effect of cover manipulation, protection, controlled burning, and regulated grazing.

Indiana Acquires Hovey Lake.--Hovey Lake, located in Posey County of Indiana 10 miles from Mount Vernon, is considered one of the beauty spots of the State and is being acquired by the Indiana Department of Conservation, Division of Fish and Game, with the assistance of Federal Aid to Wildlife Restoration Funds. The Bureau approved the acquisition on February 28.

The area is unusual in that the flora is unique and of considerable scientific interest. Several species found here are not reported elsewhere in the State. Although what is believed to be the largest persimmon tree in Indiana is found near the lake, the most interesting and conspicuous trees on the area are the bald cypresses. Hovey Lake is approximately the northern extremity of the range of this ancient species, and the preservation of this stand is, therefore, most desirable.

The lake supports an abundance of fish life, and the surrounding swamps and highlands provide habitat for all forms of birds and mammals indigenous to the region. Investigators reported an abundance of waterfowl frequenting the area at the time of their visits. This area can be further improved to benefit wildlife, and the State plans such developments for the future.



Develops D. A. R. State Forest.--The D. A. R. State Forest near Goshen, Mass., will be developed for the benefit of wildlife, according to plans submitted by the Massachusetts Department of Conservation and approved by the Bureau on April 5. The area is approximately one-half mile wide and one and a quarter miles long. It will be fenced and posted, and the cover will be improved by plantings and other improvement operations. This project is one of a series that ultimately may include most of the State forests of Massachusetts.

Raccoon Study Begins.--The management of raccoons will be studied by the Michigan Fish and Game Department as a Federal aid to wildlife project, which was approved by the Bureau in January. The work will be conducted at the Swan Creek Wildlife Experiment Station and will involve studies in causes of mortality, breeding habits, range, population, food habits, economic relations, and management of the species.

Graduate students under the direction of Dr. Durward L. Allen will be assigned to specific phases of the problem. The Michigan State College at East Lansing and the University of Michigan at Ann Arbor will cooperate with the Michigan Conservation Department on the study.

Experiment in Farm-Game Problems.--A farm-game study to determine the practical coordination of game management and farming practice in Michigan was approved by the Bureau in January. The study will be conducted by the State Conservation Department on the Rose Lake Wildlife Experiment Station, embracing typical Michigan farm land cultivated under the direction of a resident farm manager technically trained in agriculture.

The ultimate objective of the Rose Lake Wildlife Experiment Station is to determine whether game management is compatible with good farming. Special phases of the project include studies of cover plantings for erosion control, fence row cover, contour farming and strip cropping, pasture management, woodlot management, harvesting methods, flushing bar, manure disposal, food patches, and wildlife population. The game species that will be given major consideration will be the ring-necked pheasant, Hungarian partridge, and quail. Graduate students under the direct supervision of Farley F. Tubbs will be assigned to the specified phases of the study.

The Michigan State College at East Lansing will cooperate with the Conservation Department on technical problems involving farm crops and soils.

Enlarges Thief Lake Refuge.--The Minnesota Department of Conservation is using its allotment of Federal Aid to Wildlife Funds to assist in acquiring an additional 80 acres of land adjacent to the Thief Lake Refuge and Public Hunting Ground.

That tract is important as a waterfowl nesting ground and is also adaptable to the production of upland game species. The Division of Game and Fish plans to improve the tract by planting game food and cover plants.

Acquire 440 Acres for Wildlife.--With the assistance of Federal Aid to Wildlife Restoration Funds 440 acres will be acquired by the Minnesota Department of Conservation to round out the boundaries of the Carlos Avery Refuge in Anoka County.

Part of these lands are now under cultivation and will be used to produce grains and other game foods for local use. The remaining lands will be planted to trees and shrubs in order to restore favorable habitat for wildlife. The production of game foods and the improvement of wildlife habitat will greatly benefit pheasant, quail, prairie chickens, and other wildlife on the refuge.

The project was approved by the Bureau on February 27.

New York Expands Research Center.--Some 94 acres of farm land adjacent to the Delmar Wildlife Research Center will be acquired by the Division of Fish and Game, New York State Conservation Department, with the assistance of Federal Aid to Wildlife Restoration Funds. The acquisition will practically double the size of this unit.

The tract is located 3 miles northeast of Albany, and although already one of the outstanding wildlife research centers of the country, the Conservation Department plans to make many improvements, which are contingent upon acquirement of the added acreage.

Develop Massachusetts Forest.--More than 70 State forests have been established in the Commonwealth of Massachusetts, and the Department of Conservation has set aside approximately 10 percent of the forests as wildlife areas. Several years ago the Department developed a general plan that outlined the purposes for which the wildlife units may be used and established general procedures for the selection, maintenance, and development of these areas.

The plan has been successful where it has been put into operation, but the department has not had funds available to carry out the development program in detail except on two forests. Some preliminary work has been done on perhaps a dozen others.

In January the Biological Survey approved the use of Federal funds for the furtherance of this program. The first development work with the aid of Federal allotments will be on the Wrentham State Forest and will be under the direction of Harold M. Bradbury. Developments should benefit all forest and woodlot game common to the region, although particular attention will be given the needs of deer, grouse, hare and cottontail rabbits. Improvements are to be of a permanent nature, designed to improve food and cover conditions and to facilitate the care and study of the wildlife on the forest.

Oregon Beaver to Move.--Beavers, at one time one of Oregon's most important wildlife resources, will be reestablished in suitable areas throughout the State by the Oregon State Fish and Game Department. Using Federal funds, the department will attempt to restore the animal to numbers approaching its former abundance.

At present, beavers have responded so well to protection that a few areas are now overpopulated. A. V. Meyers, a graduate student in game management of Oregon State College, will determine in which areas beavers are too abundant and which areas are suitable for restocking. The animals will be live-trapped on overpopulated sections and transferred to sites now uninhabited but capable of supporting a good beaver population without interfering with other land uses.

The Oregon State College; U. S. Forest Service; Division of Grazing, U. S. Department of the Interior; and the Biological Survey will cooperate with the State Game Department on this project, which was approved by the Bureau in February.

Oregon Improves Sage Grouse Habitat.--Sage grouse, once abundant throughout the western States, have been seriously reduced in numbers and completely eliminated from some localities. Excessive hunting has played an important part in the decimation of the bird, but overgrazing and drought have seriously affected their nesting, resting, and feeding sites.

Sage grouse nest near water, and overgrazing on areas adjacent to waterholes and springs leaves little protective cover. Heavy use by livestock has reduced many live springs to desiccated mires, unfit for either domestic or wild animals and birds.

On April 10, a project was approved to restore sage grouse habitat on selected sites in southeastern Oregon by the development and utilization of waterholes, springs, and marginal streams and the protection of meadows, stream banks, and adjacent cover. The State Game Commission will enter into agreements with public agencies and private land owners to construct stock-proof fences on selected areas to restore and protect the water flow. Approximately 40 acres will be enclosed around each source of water, and the water will then be piped into livestock watering troughs placed outside the fence. Surplus water will be returned to the enclosures.

Under this plan, livestock and grouse will both benefit from an ample supply of uncontaminated water, the springs will no longer be closed by trampling, and the protected areas will provide the food and cover that the birds must have for feeding, breeding, and rearing their young.

The Division of Grazing of the Department of Interior and the Biological Survey will cooperate with the Oregon State Game Commission in this undertaking.

Acquire 9,000 Acres.--The Pennsylvania Game Commission is continuing its policy of acquiring lands for public hunting and refuge purposes. The Commission is using its allotment of Federal Aid to Wildlife Restoration Funds to assist in acquiring more than 9,000 acres in 16 tracts, located in 9 counties, thereby expanding the regular purchase program of the Commission.



The tracts consist of cut-over woodland, and submarginal and abandoned farmlands. Cover and food conditions will be improved where required, and some of the land will be set aside as refuges for seed-stock units. Surplus game from the refuges will be used to restock the areas open to lawful hunting.

Approved in February, this is the first of a series of acquisition projects contemplated by the State as part of its Federal Aid program.

First Land Acquisition Project Approved.--One of the finest hunting grounds in Central Tennessee is being purchased by the State's Division of Game and Fish, Department of Conservation, with the aid of Federal funds. The first land acquisition project to receive final approval, the area will be used as a wildlife restoration unit.

Located in Cheatham County, approximately 16 miles west of Nashville, between the Cumberland and Harpeth Rivers, the unit embraces about 18,000 acres. The area now supports a good squirrel population. Deer and wild turkey were formerly abundant, but their numbers have been seriously depleted. Some quail, raccoon, opossums and other species are also found here.

The unit is predominantly cut-over woodland, abundantly supplied with water, and with a good stand of food-producing plants. Through suitable management practices, the Division of Game and Fish plans to restore wildlife to its former abundance.

Restoring Turkey in Virginia.--The Virginia Cooperative Wildlife Research Unit at Blacksburg, Va., has been successful in rearing a limited surplus of excellent quality wild turkeys as a result of breeding experiments during recent years. The Virginia Commission of Game and Inland Fisheries believes that this surplus stock can be used advantageously to restock some of the better turkey ranges in the State, which now lack adequate breeding stock. The Commission proposed that a portion of its Federal Aid funds be used to defray the expense of a restocking program, and the Forest Service has offered its cooperation in the undertaking.

The areas to be restocked will be set aside as State Game Refuges and developed for the benefit of the turkeys. Special patrols will be provided by the Commission, and the birds will be given every opportunity to reestablish themselves in the improved habitats.

The project was approved by the Bureau on March 28.

Study Forest-Wildlife Management.--Wildlife technicians have for some time been advocating the establishment of cleared areas within forested tracts as a desirable wildlife management practice. This measure has been recommended largely because repeated observations have demonstrated that wildlife frequently congregate in such places. The type of clearing in which they should be established, the type of treatment, and the most economical procedure to follow in establishing them, have been determined largely by the experiences of individuals, with the result that a considerable element of chance has been evident in such programs.

The Virginia Commission of Game and Inland Fisheries has elected to use part of its Federal Aid funds to make a detailed study of clearings and their effect on wildlife in forest areas. The work will be conducted in cooperation with the Forest Service, Virginia Polytechnic Institute, and the Biological Survey.

William Russell DeGarmo is leader of the project, and James Edwin Thornton is his assistant. The project was approved March 29.

Buy 9,000 Acres for Wildlife.---Approximately 9,000 acres will be acquired by the Conservation Commission of West Virginia for the Nathaniel Mountain Game Management project in Hampshire County. The area purchased with the aid of Federal funds, is mountainous in character, is amply supplied with water by creeks and springs, and supports an abundance of food and cover plants suitable for wildlife in that region. White-tailed deer, ruffed grouse, and wild turkey are the most important species of wildlife now inhabiting the area. By protecting this unit from fire and by prohibiting hunting, it is planned to build up the stock of huntable wildlife to the point where good game-management practice will warrant the taking of the surplus.

Will Study Quail Fluctuations in Wisconsin.---The number of quails in Wisconsin fluctuates violently, but the magnitude of the fluctuation and its relation to weather and range conditions are not definitely known. No one has ever recorded the observations of a sample population over a long period of time.

Private individuals have for many years attempted to conduct such a study. In recent years, however, they experienced difficulty in financing the program, and because of its value and importance to the sportsmen of Wisconsin, the State Conservation Department has requested that a portion of its Federal aid funds be allocated for this work. The studies will be under the supervision of Professor Aldo Leopold of the University of Wisconsin, Dr. Paul L. Errington of the Iowa State College, and Walter E. Scott of the Wisconsin Conservation Department.

The project was approved on March 28 for a 5-year period.

#### LAND ACQUISITION

Visit Refuges.---Fred R. Kessler, senior administrative assistant, Appraisals and Negotiations, was in Florida early in February visiting the St. Marks Migratory Bird Refuge. He left Washington again on February 26 to attend the curative work in connection with Back Bay Refuge, Va., and also spent some time at Lake Mattamuskeet, N. C.

In January Elmon Radway, assistant land valuation engineer, went to Kentucky and Indiana, where he examined and appraised proposed areas under the Federal Aid act.

Goes to Minnesota.--Mr. Dieffenbach went to Winona, Minn., in March, to participate in judicial proceedings on the Upper Mississippi River Wildlife and Fish Refuge.

Conservation Committee Meets.--The Migratory Bird Conservation Commission held a meeting on January 24 in the office of Assistant Secretary of Agriculture Harry L. Brown. The following members were in attendance: Secretary of Agriculture Wallace, chairman; Secretary of the Interior Ickes; Mr. Elmer Higgins, Bureau of Fisheries, representing the Secretary of Commerce; and Hon. Chas. L. McNary, Senator from Oregon. Approval was given the acquisition of 18,219.33 acres of land of 21 units, involving 101 transactions.

Six Refuges Established.--President Roosevelt signed Executive orders establishing the following refuges: The Piedmont Wildlife Refuge, Va. (January 18), Cabeza Prieta Game Range, Ariz. (January 25), Kofa Game Range, Ariz. (January 25), Necedah Migratory Waterfowl Refuge, Wis. (March 14), Carolina Sandhills Wildlife Refuge, S.C. (March 17), and the Anclote Migratory Bird Refuge, Fla. (April 5).

Takes Extended Trip.--Arthur A. Reimer has recently returned from an extended field inspection trip in some of the southern States. His first stop was at Savannah, Ga., where final details of a gift conveyance from Dr. F. C. Wilson to the United States Government were worked out and agreed upon. In Tallahassee, Fla., Mr. Reimer conferred with the United States Attorney regarding condemnation cases with reference to the St. Marks Refuge. He also contacted Land Acquisition personnel on the Piedmont Refuge; TVA officials in Chattanooga, Tenn.; Soil Conservation Service representatives at the Noxubee unit in Mississippi; the refuge manager at Big Lake Refuge, Ark., and the owner of land adjoining the Big Lake Refuge, who was in Memphis, Tenn.; and Soil Conservation Service representatives and Land Acquisition personnel at the Kentucky Woodlands Wildlife Refuge, Ky.

Mr. Reimer recently accompanied Mr. Dieffenbach on a trip to Atlantic City, N.J., where they conferred with landowners regarding the proposed Brigantine unit in that State. Mr. Reimer also contacted the United States Attorney in Baltimore regarding condemnations on the Patuxent Research Refuge, Md.

Land Donated for Refuge.--William A. Schmidt, Junior cadastral engineer, and George L. Ducret, assistant engineering aide, are engaged on boundary surveys on the Wilson Refuge. The refuge is a gift conveyance of approximately 1,500 acres of land in Effingham County from Dr. F. C. Wilson of Savannah, Ga.

Mr. Ducret later assisted on boundary surveys on the Piedmont Wildlife Refuge, Va.

Install Lake Gauges.--T. M. Conrardy, assistant cadastral engineer, and Wesley R. Pearson, under engineering aide, have been detailed from the western area of the Division to the central area, where they will reinstall lake gauges on the Crescent Lake Refuge and begin boundary surveys on the Necedah Migratory Waterfowl Refuge, Wis.



Personnel.--William F. Neitz was appointed by transfer from the Bureau of Chemistry and Soils to the position of engineering draftsman, effective December 28, 1938.

Marion E. Phillips, assistant cadastral engineer, was detailed to the Washington office in preparation for field assignment on the Piedmont Wildlife Refuge, Ga. Mr. Phillips left Washington on February 1 for the Georgia unit to begin boundary surveys.

Oswald E. Recroft, assistant cadastral engineer, and Merland H. Benedict, engineering aide, have recently begun boundary surveys on the Kentucky Woodlands Wildlife Refuge in Kentucky.

Kenneth C. Kern, assistant cadastral engineer, has recently been assigned to the Noxubee unit in Mississippi to make boundary surveys.

T. M. Conrardy, assistant cadastral engineer, and Wesley R. Pearson, under engineering aide, are engaged on boundary surveys on the Boulder Canyon Wildlife Refuge in Arizona and Nevada.

#### WILDLIFE REFUGES

On Field Trip.--Mr. Salyer left Washington April 20 to confer with officials of the Tennessee Valley Authority on the cooperative management of the Wheeler Migratory Waterfowl Refuge, Ala., which has been established recently on the Wheeler Pool of the TVA system. He planned also to inspect refuges in the South and Southwest.

Pacific Kittiwake Comes Inland.--Stanley Jewett, in an article prepared for publication in *The Condor*, reports that a member of the Oregon Audubon Society on February 16 found a gull-like bird sick on a sandbar on the south bank of the Columbia River in Multnomah County. Examination proved the bird was a Pacific kittiwake, a species not before recorded in Oregon in other than seashore localities.

Kofa Game Range Dedicated.--On Sunday, April 2, in an impressive ceremony in which members of the Biological Survey, Forest Service, Grazing Division, boy scouts of Arizona, and several State organizations took part, the Kofa Game Range in Yuma County, Ariz., recently made a national wildlife refuge, was dedicated. Speakers at the dedication service included Major Frederick R. Burnham, scout and author; Wm. H. Sawtelle, State game warden; Everett Mercer, of the Biological Survey; Major Shepard Wilcox, president of the Roosevelt Boy Scout Council; Roscoe G. Willson, former supervisor of the Forest Service; E. C. Blankenagel, of the Grazing Division; Lee Kirby, of the Forest Service; J. S. Wright, new president of the Arizona Wildlife Federation; and E. C. Wickstrom, president of the Arizona Game Protective Association.

Quail Increase on White River Refuge.--A census conducted in February revealed 259 quail on the Big Island Chute Farm demonstration area on the White River Migratory Waterfowl Refuge, Ark., Refuge Manager Howard A. Miller reports. Seventy-five birds were counted on the same area a year ago.

Waterfowl Spend Winter on Tule Lake.--Because of the mildness of the winter and the availability of food, thousands of birds that ordinarily would have flown south have remained on the Tule Lake Migratory Waterfowl Refuge, Calif., according to C. G. Fairchild, refuge manager. An estimate taken on January 16, 17, and 18 showed that 20,500 ducks (16 species), 3,200 geese (5 species), and 350 whistling swans were on the area. Several hundred ducks were seen following in the wake of a dragline in operation on the refuge, feeding, apparently without fear, on the sago pondweed tubers dug up by the dragline bucket.

Millions of Ducks Visit Area.--During the latter part of November, 1,150,000 pintails, 50,000 mallards, and numerous other waterfowl, including five species of geese, were estimated by Refuge Manager Peter J. Van Huizen to be on the Sacramento Migratory Waterfowl Refuge, Calif.

Birds Numerous on Florida Island.--William C. Lehmann, U. S. Deputy Reservation Protector in charge of the Florida island bird refuges, states that cormorants, American egrets, and Ward's herons are so numerous on one of the keys of the new Anclote Migratory Bird Refuge that they are damaging mangrove trees. He also advises that on March 18, he saw 11 of the rare roseate spoonbills on the Indian Key Bird Refuge.

Catch 2,000 Fish on Okefenokee.--During the period November 1938 to January 1939, permits were issued for 330 man-days of fishing on the Okefenokee Wildlife Refuge, Ga. More than 2,000 fish, mostly perch, catfish, mudfish, jack, and bass, were caught during the 3 months.

Prairie Chickens Winter on Camas Creek.--At least six prairie chickens are wintering along Camas Creek just west of the headquarters of the Camas Migratory Waterfowl Refuge, Idaho, Refuge Manager Howard J. Sargeant reports. This is the first time in many years that any of these birds have been seen in that vicinity.

Ruffed Grouse Increase on Seney Refuge.--Recent reports indicate that about 237 ruffed grouse wintered on the Seney Migratory Waterfowl Refuge, Mich., this year. This is 98 more than wintered there in 1937-38.

Large Fall Migration at Swan Lake.--The 1938 fall flight in the vicinity of the Swan Lake Migratory Waterfowl Refuge, Mo., was the largest seen in recent years, according to Refuge Manager Kenneth Krumm. Large numbers of mallards, pintails, teals, baldpates, gadwalls, scaups, and ring-necked ducks concentrated on the refuge during the migration, and many remained until January 15. Mr. Krumm stated that the ducks seemed almost as familiar with the shooting regulations as the hunters, since during the open season large flocks of them were observed daily moving into the sanctuary shortly after shooting began and leaving as soon as it ceased at 4 o'clock.



Mallards Near Lake Bowdoin.--Between 800 and 1,000 mallards wintered in the seepage areas of the Reclamation canals a few miles northeast of the Lake Bowdoin Migratory Waterfowl Refuge, Mont. Severe weather and heavy snows during February necessitated feeding these birds, and Refuge Manager B. M. Hazeltine and Deputy State Game Warden Harry Cosner distributed corn, wheat, and barley harvested as surplus from food patches on the Lake Bowdoin Refuge.

Buffaloes in Good Condition.--The buffalo herd on the National Bison Range, Mont., came through the winter in fine shape, Refuge Manager Robert S. Norton recently reported. The animals were allowed to roam at will and were not fed, although they took a small quantity of hay intended for deer. The white bull in the herd is seen frequently and is in excellent condition.

Animals Fed During Winter.--Deer and pheasants were fed at headquarters of the National Bison Range. Feed was also given to deer along Mission Creek within that area. Dr. Norton, assisted by range employees, fed about 5,000 ducks and a few geese at Warm Springs, about 4 miles west of the Bison Range. At Fort Niobrara Game Preserve, Nebr., buffaloes and elk required help. These animals consumed 40 bales of hay daily during the week of February 12. At Sully Hill Game Preserve, N. Dak., the buffaloes and elk depended almost entirely on the hay put out for them. Deer and upland-game birds were also supplied feed. At this preserve the snow was about 30 inches deep in the pasture, while at other places it was about 4 feet deep. The elk also browsed on basswood brush piles.

Canada Geese Return to Crescent Lake.--Five of the 12 Canada geese raised on the Crescent Lake Migratory Waterfowl Refuge, Nebr., last season returned early in March. Refuge Manager Gilbert E. Wardwell says of them: "They were seen coming in, high from the south, circling the headquarters several times. They were met in the air by our semidomesticated flock that led them to the feeding grounds. They all alighted and started feeding as though they had left yesterday. We could not but wonder at their trip and at the gauntlets of hunters they had run. They let us walk among them as if no man was their enemy, while several of their numbers have no doubt met their fate at the hand of man."

Chukar Partridges Introduced on Valentine.--Thirty Chukar partridges were liberated in November on the Valentine Migratory Waterfowl Refuge by the Nebraska Game, Forestation, and Parks Commission. The door of the crate in which they were brought to the area was opened at night so that the birds could walk out the next morning without being excited. Nineteen of them have remained in the vicinity of the headquarters, according to Refuge Manager Ward M. Sharp.

Bitter Lakes Haven for Many Waterfowl.--Some 300,000 waterfowl were estimated to be on the Bitter Lakes Migratory Waterfowl Refuge, N. Mex., on December 18. Mallards were the most numerous, followed by pintails, baldpates, shovelers, and gadwalls. In the latter part of January, there were at least three times as many waterfowl on the refuge as in the corresponding period in 1938.



Waterfowl Take Increases at Mattamuskeet.--During the 1938 hunting season on the Mattamuskeet Migratory Waterfowl Refuge, N.C., 3,777 geese (as compared with 2,526 in 1937 and 725 in 1936) and 3,054 ducks (as compared with 988 in 1937 and 1,112 in 1936) were killed, according to Refuge Manager Maynard S. Johnson. The principal species of ducks shot were pintails, black ducks, mallards, baldpates, and green-winged teals.

Upland Game Bird Inventory Taken.--An estimate of the number of upland game birds on the Arrowwood Migratory Waterfowl Refuge, N.Dak., showed that on January 17, 700 pheasants, 1,400 Hungarian partridges, and 450 prairie chickens and sharp-tailed grouse were on the area. The inventory was reported by Lynn A. Griner, refuge manager.

Upland Game Birds Increase on Lower Souris.--The numbers of sharp-tailed grouse, prairie chickens, Hungarian partridges, and pheasants increased noticeably on the Lower Souris Migratory Waterfowl Refuge, N. Dak., during 1938, Refuge Manager C. J. Henry states. An unusual increase was noted in the sharp-tailed grouse, which apparently is near the peak of its population cycle. The refuge operated 13 feeding stations for these birds last winter. They were used by pheasants more than by other birds, not only for feeding, but also for protection from the weather.

Take Deer Inventory.--Six hundred deer were estimated to be inhabiting the Lower Souris Refuge last November. This figure was determined after a 2-day inventory in which the refuge personnel and about 40 CCC boys participated. Two mule deer were definitely identified, although it had previously been believed that all the deer on the area were whitetails.

New Blood Parasite Found.--A previously unknown blood parasite was discovered in grouse recently when the Section of Disease Control, in Washington, studied birds from the Lower Souris Refuge. In the course of bird banding operations on the refuge, an occasional light bird was found. This led to the weighing of all the grouse that were banded. A few of the light birds, as well as blood smears from others, were sent to the Section of Disease Control where investigators found that these birds were infected with a new species of blood parasite. This parasite may play an important part in the periodic cycles or numerical fluctuations of grouse and other species of upland game birds.

Bell Mountain Attracts Visitors.--Bell Mountain, so called because the extremely hard granite rocks that clutter its slopes ring like bells when struck with a hammer or rock, is one of the principal attractions to the many visitors to the Wichita Mountains Wildlife Refuge, Okla., Superintendent George E. Mushbach reports. According to legend Bell Mountain received its name many years ago when a prospector seeking mineral indications noticed the metallic clang of the rocks as he tapped them with his hammer.

Wichita Easter Pageant Attendance Record Broken.--The 1939 Wichita Easter Pageant was the most successful in the 13 years the outdoor religious service has been held at the refuge, according to statements made by refuge personnel. The number of people in attendance was considerably higher than it has ever been. Estimates ranged as high as 75,000. Registration books showed that visitors had come from California, Kansas, Kentucky, New York, Texas, and other distant points.

Deer Shed Antlers in January.--Deer on the Wichita Refuge began shedding their horns early in January, according to reports received from Charles H. Rouse, associate biologist of the Section of Wildlife Surveys, stationed there. While riding for cattle on January 13, several shed horns were found. A buck deer that died at the head of Panther Creek from some unknown cause was found on January 24 by Ranger Drummond. It had shed its horns shortly before it died. When Mr. Drummond first noticed the deer, four golden eagles were feasting on the carcass. On January 25, after treating the cattle, Mr. Rouse went to the place to obtain a sample of the stomach contents and found that the bones had been picked clean.

Eleven Buffaloes Born at Wichita.--From January 1 to March 31, five buffaloes were removed from the Wichita Mountain Refuge. One was donated to the Kansas Forestry, Fish and Game Department, and the other four to a Brownwood (Tex.) State park. Eleven calves were born during March, bringing the herd population up to 338.

Count Elk from Blimp.--In March, 187 elk were counted by 2 Army officers who flew over the Wichita Refuge in a blimp. This count is believed to be low, and refuge personnel planned to make a ground count in April.

Inoculate Cattle.--Upon the advice of a Bureau of Animal Industry specialist, most of the longhorn cattle on the Wichita Refuge were inoculated with antibacterin as a guard against hemorrhagic septicemia, which has killed many cattle on nearby farms. By March 31, 18 longhorn calves had been born, the first on March 1.

Turkeys Prepare Nests.--Wild turkeys, which have been massed in large flocks on the Wichita Refuge during the winter, have broken up into small groups, and refuge personnel report that the hens have started their nesting preparations.

"Boomers" Come Out.--"Mountain boomers," the harmless collared lizards common in the rockier areas of the Wichita Refuge, have come out of their winter quarters and are sunning themselves on the rocks. The boomers shook off the effects of their 4-months sleep, according to refuge personnel, just in time to take advantage of a plentiful supply of young grasshoppers, upon which they feed in large numbers during the summer.

Goats "Go Wild".--Superintendent Mashbach reports that a number of domestic goats that escaped from their owners and went "wild" have recently been seen on the Wichita area. The animals, which are seldom seen, live in



the rocky hills in the western part of the refuge between Mount Scott and Mount Sheridan.

One of Original Longhorn Herd Dies.--An old longhorn cow that about 22 years ago ranged over the brushlands of southern Texas recently died of old age at the Wichita Refuge. Well-known because of her twisted horn, she was one of three survivors of the original longhorn herd that arrived at the refuge in 1927. The original herd was obtained through the aid of a small appropriation by Congress and the efforts of the late Will C. Barnes, of the Forest Service. The animals were selected by Mr. Barnes and John H. Hatton, also of the Forest Service, after considerable search throughout Texas, particularly in the lower Rio Grande region and along the Gulf Coast, in an effort to obtain animals true to type. It is said that this big roan cow was one of the hardest outlaws to corral in roundups near Edinburgh, Tex. Mr. Mushback says that the range riders referred to her as the "educated longhorn," and she escaped many roundups before she was finally captured.

Elk Transferred to Carson National Forest.--Eight cow and four bull elk were recently transferred from the Wichita Refuge to the Carson National Forest near Tres Piedras, N. Mex. The animals were transported in individual crates in two trucks and arrived at the forest in fine condition, considering the long distance traveled (640 miles) and the rough roads.

Summarizes Bird-Banding Activities.--Since November 1935, 22,628 birds, comprising 117 species, have been banded on the Sand Lake Migratory Waterfowl Refuge, S. Dak., Refuge Manager Philip A. DuMont advises. In 1938, refuge personnel banded 17,240 birds, a number greater than was banded at any of the 2,193 stations in the United States and Canada except one in Louisiana. Of the birds banded since 1935, 9,979 were Franklin gulls, 6,279 ducks, geese, and coots, 397 other water birds, and 5,973 were song birds.

Ducks Winter on Northern Refuges.--Three black ducks and more than 2,000 mallards wintered on the Sand Lake Refuge, although the temperatures sometimes fell to 26 degrees below zero. Mr. DuMont explained that the birds rested on the open artesian wells and fed in nearby fields. Refuge Manager F. Sheldon Dart wrote that 80 mallards remained on the Upper Souris Migratory Waterfowl Refuge, N. Dak., until January 31, and Refuge Manager Watson E. Beed reported about 200 mallards on the Waubay Migratory Waterfowl Refuge, S. Dak., as compared with 70 the previous year. About 1,200 mallards spent the winter on the Lacreek Migratory Waterfowl Refuge, S. Dak., according to Earl Craven, refuge manager.

Hunting Successful at Bear River.--Duck hunters thought the 1938 hunting season on the Bear River Migratory Bird Refuge, Utah, was the most successful of any year since records have been kept at the refuge, Superintendent Vanez T. Wilson reports. From October 15 to November 28, 1938, 3,037 hunters killed 13,598 waterfowl, while in 1933 12,361 were taken by 3,839 hunters, the previous high for the refuge. The average daily bag was 4.477 in 1938 and 3.84 in 1937. Pintails were the most numerous in the hunters' bags, followed by green-winged teals, mallards, and shovelers.



Elk Feeding.--Although an abundance of forage was available for elk on the Elk Refuge, Wyo., at the beginning of winter, it was necessary to begin feeding activities on February 20 and continue them until March 25, Refuge Manager Almer P. Nelson reports. A count of the elk on the three feeding grounds on the area showed that about 8,000 were on the refuge proper, in addition to about 1,000 that remained back in the Flat and Sheep Creek foothills and on the hills along the south side of the Gros Ventre River. During the 35 days, the elk were fed 18,665 bales, or almost 849 tons, of baled hay and 143 tons of loose hay.

Visitors Attracted to Elk Refuge.--Many visitors are coming to the Elk Refuge, particularly on Sundays and Saturdays, to see the elk gathered on the area. On Sunday, February 5, heavy winds and a snowstorm prevailed throughout the day, but this condition did not prevent the arrival of 352 visitors, though at times the snow blown by heavy winds made it almost impossible to see as far as 300 feet from the refuge headquarters. Nearly all the visitors took the sleigh ride on hay racks provided at headquarters, going out among the animals.

Take Quail Inventory.--During an inventory conducted on April 3 and 4 by refuge personnel on the Blackwater Migratory Bird Refuge, Md., 14 coveys of quail, totaling 119 birds, were counted.

In Washington.--Dr. E. P. Creaser, biologist stationed at the Region 7 office, arrived in Washington February 20 for a month's detail. While here, Dr. Creaser assisted in working out biological management plans for the refuges in his region.

Personnel Items.--Miss Fanny F. Ginsburg, senior stenographer, formerly with the Division of Construction and CCC Operations, was transferred to this Division on January 16.

Miss Eleanor P. Kennedy, junior stenographer, resigned on December 1 to accept a position with the Bureau of Entomology and Plant Quarantine.

Robley W. Hunt, formerly junior forester on the Seney Migratory Waterfowl Refuge, Mich., was transferred on November 1 to the Necedah Migratory Waterfowl Refuge, Wis., as assistant refuge manager in charge of the project.

Ralph C. Winslow, junior refuge manager, has recently been transferred from the Bear River Migratory Bird Refuge, Utah, to the Deer Flat Migratory Waterfowl Refuge, Idaho, to replace Thomas C. Horn who has been transferred to the Medicine Lake Migratory Waterfowl Refuge, Mont. Paul T. Kreager, former refuge manager of the Medicine Lake Refuge, has been transferred to the regional office, Milwaukee, Wis.

Olin H. Cash, junior refuge manager, was transferred on February 16 from the White River Migratory Waterfowl Refuge, Ark., to the Big Lake Migratory Bird Refuge, Ark.

The following assistant refuge managers have recently been appointed: Chester R. Markley, to the Wheeler Migratory Waterfowl Refuge, Ala., effective December 1; Raymond J. Fleetwood, Piedmont Wildlife Refuge, Ga., effective January 3; Fred R. Zimmerman, Noxubee Wildlife Refuge, Miss., effective January 3; John E. Schwartz, Little Pond Oreille Wildlife Refuge, December 1; and Wm. F. Hopkins, South Carolina Sandhills Wildlife Refuge, November 16.

Earle R. Greene, under refuge manager, formerly on the Okefenokee Wildlife Refuge, Ga., was detailed on February 8 to the Great White Heron Refuge, Fla.

Samuel H. Lamb was appointed assistant refuge manager in charge of the Delta Migratory Waterfowl Refuge, La., December 1, to replace John H. Sutherlin, associate refuge manager, who was transferred to the New Orleans regional office on December 15.

Wm. R. DeGarmo, junior refuge manager at the Sabine Migratory Waterfowl Refuge, La., resigned on February 24 to accept a position with the Virginia Polytechnic Institute.

Junior refuge managers recently appointed are: Luther C. Goldman, Salton Sea Migratory Waterfowl Refuge, Calif., effective February 1; Karl G. Kobes, Mud Lake Migratory Waterfowl Refuge, Minn., January 6; Earl L. Atwood, Lacassine Migratory Waterfowl Refuge, La., January 25; Gene H. Crawford, Elk Refuge, Wyo., March 1; Frederic T. Staunton, Bear River Migratory Bird Refuge, Utah, February 1; Lawrence S. Givens, St. Marks Migratory Bird Refuge, Fla., January 17; Homer L. Bradley, Sancy Migratory Waterfowl Refuge, Mich., January 16; Donald R. Ambrosen, Upper Mississippi Wildlife Refuge, Minn., February 1; and Grant H. Shager, Malheur Migratory Bird Refuge, Oreg., January 17.

The following laborer-patrolmen have recently been appointed: Darrel F. Shuffler, Blackwater Migratory Bird Refuge, Md., December 16; Jack L. Windley, Mattamuskeet Migratory Waterfowl Refuge, N.C., December 19; Lester D. Luce, Sacramento Migratory Waterfowl Refuge, Calif., February 20; Hilmer D. Davidson, Mud Lake Migratory Waterfowl Refuge, Minn., December 19; and Ottie W. McNeely, Kentucky Woodlands Wildlife Refuge, Ky., March 1.

Gerlad F. Baker was appointed associate refuge manager in charge of the Kentucky Woodlands Wildlife Refuge on January 4.

Jack Dean was appointed mechanic on the Wichita Mountains Wildlife Refuge, Okla., on January 23.

Wm. C. Lehman was appointed reservation protector of the Florida island bird refuges effective January 9.

Raymond B. St. John, formerly assistant superintendent of the Charles Sheldon Antelope Refuge, Nev., was transferred on November 16 to the Tule Lake Migratory Waterfowl Refuge, Calif. On the same day, Wallace M. Leonard, junior refuge manager, was transferred from the Tule Lake Refuge to the Charles Sheldon Refuge.

## CONSTRUCTION AND C.C.C. OPERATIONS

Celebrate Sixth Anniversary.--More than 500 people celebrated the sixth birthday of the Civilian Conservation Corps by attending a banquet and dance at the Mayflower Hotel on April 11. Bureau representatives at the party included Dr. and Mrs. Gabrielson, Mr. Henderson, Mr. and Mrs. Dillon, Mr. and Mrs. Rutherford, Mr. and Mrs. Terhune, Mr. and Mrs. Pedersen, Mr. and Mrs. Gustafson, and Mr. and Mrs. Soderberg. Director Fechner read a message from President Roosevelt. Other speakers were Senators George of Georgia and Caraway of Arkansas and Representatives Woodrum of Virginia, Norton of New Jersey, Boykin of Alabama, Johnson of Oklahoma, Cochran of Missouri, and Sutphin of New Jersey.

Bureau CCC camps throughout the country held open house to acquaint the people in each locality with the program of the CCC, with particular reference to the part it is playing in the conservation of wildlife. The visitors were shown work projects and heard talks on the training and safety aspects of CCC work. Radio talks were given over local stations by camp superintendents and CCC inspectors in the hope of contributing toward a better understanding by the public of the purposes of the Biological Survey and the CCC.

Boys Search for Missing Man.--CCC Camp BF-1, Foxholm, N. Dak., was called to aid in the search for Frank Bloms, whose family lives about 2 miles north of the Upper Souris Refuge headquarters. A crew of boys left the camp about 9 p.m. and found the missing man about 2 hours later, lying outside the boundary fence of the refuge, his clothing caught on the barbs of the fence. A 22-caliber rifle lay on the ground. There was a bullet wound in the man's temple. Mr. Bloms had started out early in the afternoon to hunt gophers. Apparently he had attempted to climb the fence and accidentally discharged his rifle, causing the fatal accident.

Field Inspection.--H. W. Terhune, accompanied by O. W. Teckemeyer, regional CCC inspector, spent January 18 at the Montezuma Refuge, N.Y., inspecting CCC operations.

A. C. Elmer, assistant chief of the Division of Wildlife Refuges, and Mr. Terhune, visited the Bombay Hook area in Delaware, on January 24.

On January 26 and 27, Mr. Terhune inspected the Back Bay Refuge, N.C., and conferred with CCC field men in charge of the camp there. He left Washington on February 16 for a trip through Regions 3 and 5. Visits to the White River, Sabine, Aransas, Bitter Lake, Boulder, and Wichita Refuges, and the regional offices in Albuquerque and New Orleans were included in his itinerary.

CCC Director Visits Camp.--Robert Fechner, director of the Civilian Conservation Corps, visited Savannah River Camp BF-1, S.C., on March 11. He attended the foremen's weekly meeting and gave a short talk on the health and general welfare of the enrollees. Dr. Gabrielson visited the camp on the same day and together with E. S. Jaycocks, acting camp superintendent, inspected the refuge.



Safety Record Improves.--The accident frequency rate for lost-time accidents per thousand enrollees in all CCC camps under the supervision of the Bureau dropped from an average of 9.5 on January 1, 1936, to 2.7 on December 31, 1938. There were no fatal accidents during the 3-year period. The rate for the last 5 months shows little fluctuation as compared with the previous months, which indicates a continuous and determined effort on the part of the field men to keep accidents to a minimum. Bureau camps had 280 lost-time accidents in 1936, 198 in 1937, and 157 in 1938.

Excellent Safety Record at Medicine Lake.--January 31 was the 433rd consecutive day of operation at Medicine Lake Camp BF-2, Mont., without a lost-time accident. All enrollees attend safety meeting each Thursday evening. Foremen, officers, and field leaders meet monthly to discuss safety.

From Enrollee to Dragline Operator.--A former CCC enrollee at White River Camp BF-1, Ark., Crawford Hall, is now employed by a private concern as a dragline operator on a levee project in Arkansas, and is earning \$250 a month. Mr. Hall learned to operate a dragline while an enrollee at the camp. He later served on the Bureau's pay roll for 15 months, first as dragline operator and then as laborer patrolman.

Develop Lake Mead.--Considerable development work is being done by Bureau CCC enrollees at the north end of Lake Mead, Nev., where the Virgin and Muddy Rivers enter the lake formed by Boulder Dam. W. J. Gregson, regional CCC inspector, reports that work is being rushed to an early completion because the Bureau of Reclamation intends to fill Lake Mead during the coming spring run-off.

The lower dikes to be built on this project are less than one-half mile from the short of the lake. Within a few months these dikes will be flooded. Speculations as to how soon the water might flood the workings kept those connected with the project somewhat nervously anticipating inundation. This situation was relieved with an announcement by the Bureau of Reclamation that they were lowering Lake Mead 2 million-acre feet. This action was taken in anticipation of a run-off in excess of 13 million acre feet, the amount required to fill the lake to its capacity.

About 250,000 yards of earth will have to be moved into the dikes to effect completion. This must be accomplished in about 3 months, when inundation is expected.

The CCC personnel, Lawrence G. Greager, camp superintendent, and three foremen from the Sheldon Refuge, Nev., are working two shifts of CCC enrollees daily. These enrollees are provided by the various agencies having camps in this vicinity--25 each from Forest Service, Park Service, and the Division of Grazing.

CCC Program at Desert Game Range.--The Division of Grazing, which controls the grazing rights on the Desert Game Range, Nev., has set up projects for a road into the Desert Game Range near Las Vegas. Mr. Gregson states that the road will benefit both the Survey and the Division of Grazing. It will be laid out by Camp Superintendent Creager in connection with his work at the Muddy River development on the Boulder Dam.

The Division of Grazing plans to construct low rock dams, similar to those already built in the Wichita area, in the canyons of the Desert Mountain Range. These dams will act as check dams as well as water storage in heavy run-off. The Survey has been asked by the Division of Grazing to give whatever technical assistance is necessary in the location and construction of these dams as well as to occasionally inspect the work being done.

Organize Crime Club.--A. "J. Edgar Hoover Club" was formed by CCC boys at Camp BF-1, Utah. The enrollees will study scientific aspects of crime detection. Classes held by the club will be supervised by the local sheriff, Fred M. Sorensen, who is a graduate of the F.B.I. Training School at Northwestern University. The technique of finger-printing will also be studied.

Personnel Changes.--George D. See was appointed an assistant statistical clerk on February 1. He will work in the Washington office.

Eugene E. Frazier, superintendent of Sabine Camp BF-1, La., resigned, effective March 31. He was replaced by Earl A. Chaisson, who reported for duty on March 16.

Neil E. MacDougall, formerly superintendent of Back Bay Camp BF-1, has been transferred to the Soil Conservation Service. He will serve in the capacity of junior agricultural engineer in Region 6, with headquarters at Liberal, Kans.

## GAME MANAGEMENT

### Law Enforcement

Dove Shooters Arraigned.--Fifteen persons, 8 apprehended in Elmore County and 7 in Autauga County, Ala., were arraigned in State court and fined \$20 each and costs for hunting mourning doves during January by means of bait. Six other men in Autauga County, who hunted doves with guns capable of holding more than three shells, were also fined \$20 each and costs.

Hunter Loses Rifle.--Evidence obtained by a Federal agent and a State officer of the killing of a mourning dove on February 14 at Glendale, Ariz., resulted in a plea of guilty in State court by the hunter who, in default of a \$10 fine, was committed to jail for 10 days. His rifle was confiscated.

Charged with Sale of Ducks.--A resident of Komatke, Ariz., arraigned in State court on February 28, was charged with selling ducks and possession during the closed season. Fined \$40 or 20 days in jail, the defendant is serving the jail term in default of fine. State and Federal wardens cooperated on this case.

Indian Jailed.--An Indian residing at Laveen, Ariz., was fined \$50 and in default committed to jail for 50 days when he pleaded guilty in State court at Phoenix, on January 21, to selling 8 mourning doves and 10 quails. Federal and State officers cooperated on the case and caught the Indian in the act of making the sale.

Caught with 250 Doves.--After a chase by State and Federal officers, five men were apprehended with 250 doves. In Federal court at Tucson, Ariz., on January 13 the men changed their pleas of not guilty to guilty. On the charge of unlawful possession of whitewing doves, one was fined \$50, 60 days in jail; two were fined \$100 each; and two, \$50 each. In all cases the court suspended sentence for 5 years on the second count, illegal possession of 43 mourning doves, and warned the hunters regarding future violations of State or Federal laws.

Duck Hunters Fined.--Seven cases were obtained by a State warden and Federal agent in Arkansas during December, 1938. Four hunted ducks after 4 p.m., and three killed ducks with guns holding more than three shells. The cases were successfully prosecuted in State court by fines and costs totaling \$165.

Gets Man After 2 Years.--A U. S. game management agent obtained evidence against a resident of Stuttgart, Ark., who had made two sales of wild ducks in 1937. In Federal court at Little Rock on March 3, he was tried before a jury, which returned a verdict of guilty. The court sentenced him to 30 days in jail.

Fined \$200 for Hunting on Refuge.--A resident of Balboa, Calif., pleaded guilty in Federal court at San Diego, on March 17, to charges of (1) entry on the Salton Sea Refuge without a permit, (2) hunting geese on the refuge, and (3) discharging firearms on the refuge. He was fined \$200.

Used Powerboat.--Charged with killing waterfowl from a powerboat, a resident of Beverly Hills, Calif., was fined on March 8 \$50 or 20 days in jail. Defaulting payment, the defendant was committed to jail. State and Federal wardens cooperated on the case.

Tavern Keeper Pays \$100.---Pleading guilty to selling wild ducks at his tavern in El Cerrito, Calif., on November 23 and 26, 1938, a defendant in Federal court at San Francisco on February 9 was fined \$100.

Beaver Shipper Jailed.--A trapper who sent seven illegally trapped beavers from California to Washington on January 27, when arraigned in Federal court at Los Angeles entered a plea of guilty and was sentenced to 120 days in jail. The skins were seized by the assistant chief patrol officer of Washington in company with a Federal agent.

Wild Ducks Costly.--Two residents of Newman and a resident of Los Banos, Calif., who sold wild ducks to a Federal agent in November 1938 were arraigned in State courts on January 24. One defendant was fined \$100; another \$100 and probation for 1 year; and the third, 6 months in jail to be served on 2 years'



probation. Another man was fined \$10 for aiding in the sale. State wardens also cooperated in these cases.

Bagged 62 Ducks.--Three residents of Yuba City, Calif., killed 62 wild ducks on February 19 in Sutter County. Arraigned in Federal court at Sacramento on March 14, each was sentenced to serve 3 months in jail. The men had previously been sentenced in State court to serve 20 days each in jail. Evidence was obtained by a State game warden.

Court Fines Eight.--Nine cases obtained by State and Federal officers have recently been disposed of in Colorado State courts, as follows: Possessing waterfowl in close season, \$25 and costs (2); hunting waterfowl in close season, \$25 and costs (2); illegal possession of beaver hides, \$50 and costs (4); illegal possession of pheasants, 10 days jail (1).

Jury Returns Guilty Verdict.--A jury in Federal court at Wilmington, Del., returned a verdict of guilty, on January 4, in two cases involving the hunting of wild ducks by aid of live decoys. One defendant was fined \$100, the other \$25.

Floridian Hunts in Delaware, Jailed.---A resident of Miami, Fla., killed two wild ducks in close season near Woodside, Del. He was apprehended by a State warden and a Federal patrolman and prosecuted in State court. Failing to pay a fine of \$100 and costs, he was committed to jail for 60 days.

Hunt Out of Season.--Seven men apprehended in Illinois for hunting ducks in January and February were sentenced in State court. Four were fined \$27 each, and three were jailed in default of fine. Five men apprehended by agents of the Biological Survey for hunting wild ducks and geese early in March 1939 received fines and costs aggregating \$210 in State court.

Night Hunters Caught.--For killing ducks at night and in close season, two residents of Beardstown, Ill., were apprehended on March 3 by a State investigator and two Federal agents. The hunters were fined \$52 each in State court and sentenced to 15 days in jail. The sentences were suspended, and the men placed on probation for 1 year.

Used Baits.--Five hunters charged with hunting wild ducks by aid of feed were arraigned in Federal Court at Quincy, Ill., on April 24. One was fined \$25, and the others \$50 each.

Fined \$52 each.--Two persons apprehended hunting ducks in Whiteside County, Ill., on March 22, and taken into State court were fined \$52 each.

Baited Doves.--Thirty-seven Migratory Bird Treaty Act cases were closed in Federal court at Lexington, Ky., at the January term, by pleas of guilty with fines and costs of \$70 each. In three cases the fines were suspended. Thirty-three hunters were charged with hunting mourning doves by means of bait, and 4 with hunting these birds with guns capable of holding more than 3 shells at one loading. The hunters included a policeman, city attorney, county

attorney, circuit court judge, banker, insurance agent, hotel operator, beer dealer, a funeral director, and florists.

Violates Probation.--The suspended sentence imposed on a hunter on January 28, 1935, for violating the Migratory Bird Treaty Act was revoked in Federal court at Alexandria, La., on December 13, because he violated the terms of probation by hunting wild ducks before 7 a.m. on December 8, 1938. The hunter was sentenced to 4 months in jail. On the remaining count, sentence was suspended for 5 years, and the defendant placed on probation, conditioned upon his not violating any laws, State or Federal, during the period of suspension and probation.

Killed Robins with Slingshots, Switches.--Seven persons were apprehended near Alexandria, La., for killing robins, which were blinded by headlights and killed with switches and slingshots. Federal officers and a State agent made the arrest on January 27, seizing 185 dead birds. The "hunters" were required to furnish bond of \$300 each for appearance in Federal court in the near future.

Seven Pay Fines.--Nine Migratory Bird Treaty Act cases were terminated in Federal court at Alexandria, La., on February 27, as follows: Killing a woodcock in close season, \$10, suspended (1); hunting with unplugged guns, \$10 (2), \$10, suspended (1), \$15 (1), \$20 (1), and \$25 (2); and killing a wood duck, dismissed (1). One person hunting without a stamp was fined \$20.

Night Hunters Jailed.--One year was the sentence given two residents of Sabine Pass, Tex., who pleaded guilty in Federal court at Lake Charles, La., on January 23 to hunting geese after dark and with unplugged shotguns. The men were arrested on December 9, 1938, on the Sabine Marshes in Cameron Parish, La., by two U. S. game management agents operating with two State conservation agents. When told to submit to arrest one of the men called to the officers to stop where they were and stated if they took another step he would kill them. Both hunters had their guns trained on the officers.

Disposes of 25 Cases.--Migratory Bird Treaty Act cases were disposed of in Federal court at Lake Charles, La., on January 23, as follows: Selling ducks, 60 days each (2); hunting ducks in close season, \$10 (1); over limit of doves, \$25 (2); hunting egrets \$15 (1); possessing 30 snipe, \$25 (1); no plug, \$10 (2), \$15 (1), \$25 (1); hunting after 4 p.m., \$10 (3), 60 days (1); and hunting before 7 a.m., \$10 (1), \$15 (1), \$20 (3), \$25 (2).

Three men hunting without a stamp were fined \$10 (2), and \$25 (1), and one hunting on a Federal bird refuge was fined \$10.

Killed Ducks and Coots.--Two residents of Plaquemine, La., were apprehended by the agents of the Survey on December 31, 1938, in Iberville Parish, for hunting, killing, and possessing ducks and coots in closed season. Tried in the United States District Court, at Baton Rouge, the men plead guilty on April 10, and each was sentenced to serve 5 days in jail.



Caught Hunting on Island.--Four men hunting wild ducks on Chebeague Island, Maine, were apprehended by Federal agents on February 18. Two were caught after attempting to evade arrest.

Sellers Sentenced.--Two Massachusetts residents charged with selling wild ducks entered pleas of guilty in Federal Court at Boston on April 12. Each was given a suspended sentence of 4 months and placed on probation for 2 years.

Sentenced for Shooting from Motorboat.--A real estate dealer of Caseville, Mich., was sentenced to serve 6 months in the Federal Detention Farm at Milan after he plead guilty in Federal court for the Eastern District of Michigan on January 20 to shooting at coot from, and rallying wild ducks with, a motorboat and hunting with an unplugged gun.

Over Bag Limit, Pays \$250.--Charged with possessing wild ducks in excess of the bag limit, a resident of Crisfield, Md., was adjudged guilty in Federal court at Baltimore on January 20 and fined \$150 and costs of \$100.50.

Two other hunters, one from Taylor's Island and the other from Cambridge arraigned at the same court session were fined \$50 and \$25 each after pleading guilty to killing wild ducks with the aid of bait and live decoys.

Illegal Beaver Shipper Arrested.--For illegally shipping 10 beaver skins from Michigan to Ohio in 1937 contrary to the Lacey Act, a resident of Indian River, Mich., was arrested on March 17 by a U. S. deputy marshal in Michigan. Unable to furnish bond of \$2,000 the shipper was jailed to await trial.

A dealer in Minneapolis, Minn., was recently fined \$125 and costs of \$17.80 after pleading guilty in State court for illegally possessing beaver skins.

Speared Muskrat, Apprehended.--A Federal deputy agent and a patrolman of the Upper Mississippi Wildlife and Fish Refuge, together with State wardens, on February 6 found two persons illegally spearing muskrats at night on the Huron County area of the refuge. One was immediately arrested. The other, a notorious game-law violator, made his escape but was later taken into custody. Both men were prosecuted in State court in Minnesota, the one was fined \$100 and costs and the other \$300 or 9 months in jail. Failing to pay the fine, he was committed.

Hunting in Close Season.--Five persons found by Federal and State agents hunting ducks in close season in Missouri were successfully prosecuted in State court. Two were fined \$10 each, one \$36, and two \$35 each.

State Court Fines 15 Men.--As a result of cooperation between Missouri State highway patrolmen, State conservation officers, and agents of the Biological Survey, 15 individuals were apprehended in southeastern Missouri for hunting wild ducks in close season and for buying wild ducks in the first week of March. The men paid fines and costs totaling \$273.



Shipped Beaver Skins.--When Federal agents learned that 14 beaver skins, of animals taken in Montana, had been transported to Ohio and then to New York, the shipper was arrested and prosecuted in the Montana State court. The skins were seized, and the defendant fined \$100.

Close-Season Goose Shooters Fined.--Six individuals found by State and Federal officers killing geese in Garden County, Nebr., during December and February and arraigned in State court were fined \$10 each and costs.

Three other cases, one for possessing a goose in close season and two for hunting wild geese, will be presented to the Federal court.

Waterfowl Baited with Feed.--Two residents of Oshkosh, Nebr., who hunted waterfowl by aid of feed on November 6, 1938, entered pleas of guilty in Federal court in North Platte on March 12 and were fined \$25 each.

Fined \$64.--Apprehended by a State warden and a Federal officer on March 3 for killing ducks in Atlantic County, N.J., a resident of Pleasantville on arraignment in State court pleaded guilty and was fined \$64.

Tug Boat Used for Hunting.--Four men in a moving tug boat were seen on January 20, by two New Jersey State game wardens on the Delaware River in Mercer County, N.J., shooting at wild ducks. The captain and other members of the crew who did the shooting were interviewed at the dock by the wardens and a Federal deputy. The men were immediately taken into State court in New Jersey and fined \$27.50 each. Three of the men reside in Philadelphia, and the other at Ocean City, Md.

Gun Held Five Shells.--A fine of \$25 was imposed in a New York Federal Court, on January 2, when a gunner entered a plea of guilty to hunting woodcock with a gun holding five shells.

Nine Fined, Three Discharged.--Migratory Bird Treaty Act cases in Federal court at Rockingham, N.C., were disposed of as follows on March 7: Hunting from motorboat \$100 (1) and \$25 (3); killing woodcock in close season, \$10.50 (1); wood duck \$25 (2), discharged (3); hunting ducks after 4 p.m. \$25 (2).

Close Season Hunters Fined.--A hunter who killed a woodcock in close season was fined \$10.50 in Federal court at Rockingham, N.C. Three men were fined \$25 each and one \$100 for hunting wild geese from a motorboat, while four paid fines of \$25 each for killing wood ducks.

Deer Killer Sentenced.--A Bureau ranger at the Wichita Mountains Wildlife Refuge, Cache, Okla., on February 1 found a hunter who had just killed a deer on an area outside the refuge. The matter was reported to a State game ranger, and on April 18 the hunter appeared in State court and entered a plea of guilty. He was fined \$100 and costs of \$13.75 and in addition sentenced to 10 days in jail.

Hunted in February.--On information obtained by a State police officer, a sheriff, and a Federal agent, two persons who killed ducks, pheasants, and partridges during February were prosecuted in State court in Oregon. One was fined \$10 and costs. The other, in default of a \$25 fine and costs, was committed to jail for 12-1/2 days. Shotguns of both were confiscated. A third man who hunted ducks in February was fined \$27 and his gun confiscated.

Farmer Fined, Son Sentenced.--Charged with possessing 22 ducks in close season, a farmer of Sauvies Island, Oreg., was taken to State court and fined \$50 and \$2 costs. The farmer's wife, arraigned on the same charge, was dismissed with a reprimand. His son and nephew, also charged with hunting and trapping ducks in close season, were ordered committed to a training school, then paroled to their mothers. Evidence in these cases was obtained by an officer of the State police and a Federal agent.

Carry Deer Across State Line.--Two hunters charged with illegally transporting a deer from New Mexico to Texas on March 19 and prosecuted under the Lacey Act were fined \$25 each in Federal court at El Paso, Tex.

Five Geese Hunters Pay \$330.--Four persons in Refugio County, Tex., who killed geese in November 1938 in excess of the daily bag limit, entered pleas of guilty in State court during January. Three were fined \$61 each, and one \$111. Another, who killed geese in the same county before 7 a.m., was fined \$36.

Catch February Hunters.--Four persons killing wild ducks during February were apprehended by State game wardens and a Federal agent in Chambers County, Tex. All were arraigned in State court and fined \$36 each.

Killed Canvasback.--Five days in jail for killing a canvasback duck on March 15 was the sentence given a hunter by the Federal court at Wichita Falls, Tex., on March 28.

Illegal Duck Hunter Fined.--Pleading guilty to killing ducks in excess of the daily limit a hunter in Federal court at Richmond, Va., on February 27 was fined \$50 and costs of \$27. Another defendant was fined \$100 and costs of \$23.80, after pleading guilty on April 18 to possessing two woodcocks in close season.

Found Guilty of Wild Duck Charge.--A resident of Tangier Island, Va., who, on November 3, brought 51 dead wild ducks to Washington, D. C., pleaded guilty in the United States court for the District of Columbia on February 20. His case was referred to the probation officer, and on February 28 the court imposed a fine of \$200 or 90 days in jail and suspended sentence, placing the defendant on probation for 1 year. The court reminded the defendant that a violation of the Migratory Bird Treaty Act was a serious offense and that in imposing sentence the defendant's past record had been taken into consideration.

Killed Egrets.--For shooting two egrets on June 27, 1938, in Warren County, Va., a resident of Front Royal was fined \$250 in Federal court at Harrisonburg on March 20.

Duck Baiters Pay \$150 Each.--Charged with violating the Migratory Bird Treaty Act by killing wild ducks last fall by aid of bait, 10 residents of Washington were adjudged guilty in Federal court at North Yakima on March 16. Nine defendants were fined \$150 each, and one was fined \$175.

In admonishing the defendants, the judge commented that it was not the idea to see how close one could get to the flame without getting burned but how far one could stay away from it.

For hunting without a duck stamp, another man was fined \$25 at the same session.

Buy Wild Ducks.--Four residents of Blytheville, Ark., entered pleas of guilty in Federal court at Jonesboro on May 1 to violating the Migratory Bird Treaty Act. One defendant was fined \$50, and another \$250 for buying wild ducks. The third man was sentenced to 30 days in jail and placed on probation for 1 year for possessing ducks in close season, and the fourth, arraigned on a similar charge, was placed on probation for 6 months.

Refuge Hunting Brings Jail Sentence.--Two individuals, guilty of unlawfully entering the Tule Lake Wildlife Refuge, Calif., carrying firearms, and disturbing wildlife, were sentenced to serve 3 months each in jail when arraigned in Federal court on April 17 at Sacramento, Calif.

Used Bait.--Entering pleas of guilty in Federal court for the Southern District of Illinois to killing ducks by aid of feed, nine Illinois residents paid a fine of \$25 each on May 3.

Confiscate Automatic Shotguns.--Information regarding three persons found hunting ducks in close season in Scott County, Iowa, was obtained by Federal officers on April 12 and given to a State warden. The hunters were fined \$25 each in State court. Three automatic shotguns were confiscated.

#### Alaska Game Law Administration

Executive Officer Visits Washington.--Frank Dufresne, executive officer of the Alaska Game Commission, visited the Washington offices during February to confer with Biological Survey officials on the Commission's recommendations for amendments to game law regulations for the 1939-40 season. He also dis-



cussed various phases of the administration of the Aleutian Islands Reservation. On March 1 he returned to Alaska via Chicago and points in Wisconsin where he visited fur and game farms. Enroute to Seattle he conferred with Regional Directors Laythe and Murray and during the week spent there he conferred with officials of the State Game Department and made a trip to Vancouver, B.C., to meet with Canadian Game officials.

Patrols District by Plane.--Continuing his trip from Kotzebue to Nome, Wildlife Agent Collins, of district No. 14, left Marshall on January 2, visiting Holy Cross, Mountain Village, Old Hamilton, and Unalakleet, and arrived in Nome on January 13. While at Nome he established headquarters in the new Federal Building. Mr. Collins left Nome in his personally owned airplane on February 22 and arrived at Fairbanks March 8. Several of the larger villages and settlements were visited enroute. At Fairbanks he assisted Agent McMullen in patrolling the Fairbanks district. During March, Mr. Collins flew to Anchorage to assist Agent O'Connor.

Violations Reported.--During the quarter ending March 31, 53 violations were reported. Seven involved aliens, 40 fur and game, and 6 fur accidentally taken and surrendered. Articles seized in connection with violations had an estimated value of \$1,196. Fines totaled \$2,120, and jail sentences 1,304 days. Of the 127 furs seized, most were beaver, mink, marten, or muskrat.

Attends Game Commission Meeting.--During January Wildlife Agent White, of district No. 11, attended the meeting of the Alaska Game Commission at Juneau. On his return to Fairbanks he stopped in Anchorage to discuss plans for the spring patrol with Agents Rhode and O'Connor.

Territory Amends Bounty Law.--During the 60 days (January 9 to March 9) the territorial Legislature was in session at Juneau. The wolf and coyote bounty problem took up more time so far as wildlife matters are concerned than any other one issue. The legislators finally passed a bounty bill providing for a continuation of the present payment of \$20 each for wolves and coyotes, but placed the responsibility of authenticating bounty claims in the hands of wildlife agents. While this may be taken to be an expression of confidence in the Commission, it will undoubtedly be a considerable drain on the Commission's finances, since the Territory did not make any funds available for this particular purpose.

Agent Becomes Refuge Manager.--On January 23 Wildlife Agent H. Douglas Gray left Juneau for Washington, D.C., where he met with Bureau officials to discuss a program for the administration of the Aleutian Islands and other Alaskan refuges. While in Washington his transfer from the rolls of the Alaska Game Commission to the Biological Survey as associate refuge manager was approved effective May 1.

Agent Finds Trapper Dead.--Agent Sarber, of district No. 2, left Petersburg on January 4 aboard the "Black Bear" for a patrol of the trapping area in his district. The trip included Wrangell, Marshy Island, Snow Pass, Bushy Island, and Bradfield Canal. Another patrol trip was made to the west coast of Prince of Wales Island, leaving Petersburg January 16 and returning January 25. On January 29, Agent Sarber again left Petersburg aboard the "Black Bear" to apprehend a trapper for whom he held a warrant and who had recently been reported insane. The agent proceeded to Wrangell where he picked up U. S. Deputy Marshal Nolan and left for the trapper's hideout on Marshy Island. After a 2-day intensive search, the trapper's body was found in the woods of the island. Apparently he had committed suicide. Mr. Sarber left Petersburg and arrived in Juneau on February 17. He worked in the Juneau office, preparing for the brown bear control project on Kodiak Island, until February 28 when he boarded the steamer for Seward. While at Seward he arranged to have Frank Revell and George Nelson, registered guides, assist him in the control work on Kodiak Island. He arrived at Kodiak on March 11.

Holds Meetings with Trappers.--Agent Banta, of district No. 3, made a 6-day patrol of the Behm Canal district, returning to Ketchikan January 8. Several short patrol trips covering close-in areas were made in February and March. Agent Banta held several meetings with trappers in and around Ketchikan, and much educational work was accomplished.

International Boundary Patrol.--Agent Rhode, of district 4, in company with Agent White, left Anchorage by chartered plane for Dawson, Yukon Territory, to join an officer of the Royal Canadian Mounted Police. The three proceeded to Snag, Yukon Territory, where a complete patrol of the Alaska-Yukon border was to start. To date, several poison violators have been taken into court, and the leg bones of at least 90 coyotes have been detached from the skins in Canadian territory. Some trappers leave these bones attached to the skins and smuggle them into Alaska for bounty payments.

Transferred to Juneau.--Agent Gallwas, of district 5, left Anchorage January 4 for a patrol of the upper Kenai Peninsula and arrived at Seward, January 24. Several alleged violations were investigated on this trip. Mr. Gallwas was transferred from Seward to Juneau on February 3. While in Juneau, he patrolled the southern part of district No. 1, aboard the "Bear." Another trip was made to Haines, Alaska, in company of Agent Sarber. During the greater part of his stay in Juneau Mr. Gallwas has been working on reports and violations.

Violators Apprehended.--Agent Benson, of district No. 7, spent January and the first 5 days of February at the McGrath headquarters patrolling close-in areas on foot and doing office work. On February 6 accompanied by Wayne House, he left McGrath by airplane, arriving the same day at Folger Landing on the Naknek River. A patrol of this district and the area between Naknek River and Ophir was made on snowshoes. Nine violators were apprehended. Two were brought to trial, and seven were allowed to come in at a later date. Over 200 miles were made on foot, and 225 miles by plane. On March 8, Mr. Benson made a trip to Sleetmute, returning to McGrath March 16, with a meat hunter who was later convicted.



Makes Aerial Patrol.--Agent Carson, of district No. 8, made an airplane trip into the Naknek district during the early part of January. Several short dogteam patrols were made in the vicinity of Dillingham. Extremely cold and stormy weather in this district, throughout this quarter, made patrol work a hazard. Several violators, however, were apprehended and brought to court.

Attends Fur Rendezvous.---During January Agent O'Connor, of district No. 9, checked trappers and trap lines in the Anchorage district. During February, he attended the Fur Rendezvous at Anchorage and superintended the sale of furs, sold by the Alaska Game Commission at an auction held by the Rendezvous. He went to Fairbanks, early in March, to assist Agent McMullen and to represent the Commission during the ice carnival held there.

#### PREDATOR AND RODENT CONTROL

Returns from Field Trip.--Mr. Green returned to Washington on February 1 after spending a month in the field. He had attended the annual conventions of the State woolgrowers' associations in Idaho, Oregon, Montana, Utah, and Washington, and the convention of the National Woolgrowers' Association at San Angelo, Tex.

At these conventions Mr. Green became personally acquainted with many woolgrowers and became more familiar with the predator problems of the sheep industry. He also contacted many of the personnel of the Division of Predator and Rodent Control in the western States, and cooperators in the Bureau's control program. Mr. Green also attended a conference of the division's supervisory field force in Texas, which was held in San Antonio.

Colorado Paper Discontinues Payment of Bounties.--The Denver Post announced it would discontinue payment of bounties on mountain lions killed in Colorado on and after February 1, according to District Agent W. E. Riter. In 19 years the Post paid \$22,505 in bounties for some 1,000 mountain lions. The paper, it is said, believes that the real purpose of the bounty has been achieved and that the actual need for it has passed. The gradual scarcity of lions in Colorado has led to the development of a new racket--transporting lion skulls across the border from other States where killing the big cats is less profitable than in Colorado. This practice has been found to defeat the legitimate purpose of the bounty system, reports the Post.

Stolen Coyote Unprofitable.--Through the cooperation of State Game Warden Mayse and Game Management Agent Frank Poley, a resident of Colorado Springs, Colo., was apprehended and fined \$50 and \$10.35 court costs for stealing a coyote from the trap line of a government hunter. The irony of the situation was that the man gave this animal to his son-in-law, who in turn sold the skin for \$1. It is hoped that the action taken against the violator, which was publicized in the local papers in Colorado Springs, will serve as a deterrent to other hunters.



Stole Coyote Pelts.--On New Years Eve, two Mexicans stole 15 coyote pelts from a locked warehouse in Antonito, Colo., according to Mr. Riter. Investigations conducted by State Game Warden Horace G. Bayne disclosed that the men had sold the pelts to a Walsenburg, Colo., fur dealer. The men were arrested and held for the U. S. marshall. In Federal court on January 23, one was sentenced to 4 months in the county jail, and the other to 1 year in the Federal prison at Leavenworth.

Pine Mice.--In Delaware, fields containing rhubarb roots left there for the winter are riddled by pine mice, according to Assistant District Agent E. M. Mills. The soil is sandy and has no surface vegetation, and the mice follow the rows and make runs around each rhubarb root. One of these roots, taken from fields owned by Henry Austin of Felton, Del., has been sent to the Bureau for photographing. Mr. Austin estimates that mice cause him an annual loss of at lease \$500. An extensive pine mice control program in Delaware is planned.

Exhibits Rodent Control Work.--The rodent control project in New England participated in agricultural and Extension Service exhibits at Worcester, Mass., Rochester, N.Y., Kingston, N.Y., Concord, N.H., and at Lewiston, Maine, during the winter months, according to District Agent George B. Lay of Region 8. Live animals were displayed in cages, and the habits, value, and damage done by these animals were explained to large audiences. An electrical device showing the hours of activity of Microtus attracted considerable attention. Apple tree trunks showing mice damage were displayed with placards explaining salient points. Bats caught in winter at bat caves near Pepperrell, Mass., and shrews and moles, were exhibited as examples of beneficial animals.

Rat Damage Costly to Poultry Raisers.--From a compilation of data collected in many parts of Massachusetts, Walter W. Dykstra, assisted by George W. Dyar, prepared a special report on poultry losses from rat damage in that State. Mr. Lay states that one poultry plant, the largest in the United States, estimates its annual loss from rat damage at \$12,000. This survey is helpful in that it emphasizes the losses suffered by poultry raisers, and thus creates a keener interest in the rat-control problem.

Eliminate Coyote-Dog Cross.--The Game Protective Association of Maine succeeded in eliminating many animals near Lincoln, Maine, that apparently were a cross between coyotes and shepard dogs. These animals had done damage before they were destroyed, Mr. Lay reports.

Discuss Mouse Damage to Conifers.--A preliminary report on "Mouse Damage to Conifers" has recently been compiled by Robert Isaac and Howard Merrill, working in Connecticut and Rhode Island, according to Mr. Lay. Pine mice and Microtus damage certain conifers and leave others alone, the report shows. The work will be continued so that a list of conifers that may be planted without fear of mouse damage may be available to the public.

Rabbits Damage Nursery Stock.--J. E. Fitzgerald, of Stephanville, Tex., reports that during the past year rabbits have cost him at least \$1,000 by skinning his nursery stock. Near one block of stock he had a pea patch, and the rabbits ate peas all winter without disturbing the trees. Where there were no peas, the nurseryman wrote Mr. Lindsey, the rabbits climbed an 18-inch mesh wire to reach the trees. Mr. Fitzgerald expects to have the same difficulties when the rain has rotted the peas.

Catches 750 Gophers in 3 Years.--Using no more than four traps at a time, P. E. Mackey, a rose grower near Tyler, Tex., trapped more than 750 gophers on a 15-acre area in 3 years, according to a report received by Agent Henry Pluenneke. In 1936, Mr. Mackey trapped 350 gophers, or "salamanders," as he calls them; in 1937, 200; and in 1938, though not tending the traps, 200. In December 1938, he paid a boy \$1 to put out the poisoned grain issued at the division's demonstration. The boy treated the farm and obtained a 90 percent kill with the first poisoning. Since the second treatment, no signs of the animals have been seen.

Mr. Mackey is convinced of the effectiveness of an organized program using poisoned grain. He is said to have received better results from 8 hours' work under this program than he obtained by spending one hour almost daily with his traps. Mr. Pluenneke added that "this sounds like a lot of gophers for a 15-acre plot, but the area is surrounded by Bermuda pastures where no control measures were practiced until this program started."

Crippled Predators Hardest to Catch.--E. G. Pope, of Palo Pinto County, Tex., worked 75 days trying to take one crippled red wolf on the Copeland Ranch in Stephens County, District Agent C. R. Landon reports. The wolf is said to have destroyed \$1,000 worth of sheep and goats in less than a year. While trailing it, Mr. Pope caught another red wolf and a bobcat in the vicinity of the Copeland Ranch, and 8 red wolves elsewhere. When finally caught in a blind water set on October 17, the crippled animal was found with one front foot entirely gone, two toes off one hind foot, and the other hind foot broken. "It is little wonder that this animal had learned to fight shy of traps," stated Mr. Landon.

Control Porcupine in Utah.--Effective porcupine control was conducted during the first quarter of this fiscal year in cooperation with the Forest Service on the Dixie National Forest, Agent R. Scott Zimmerman of Utah reports. It is estimated that the work accomplished will protect 12,000 acres of western yellow pine. A lone western yellow pine tree standing on a ridge between rock slides from an extensive lava flow area and forest-covered hill-sides is visited each year, and the old poison blocks replaced by new ones. Over a period of 8 years, 52 porcupines have been taken near this one tree, states Mr. Zimmerman.



Trap Looting Nets Penalty.--For stealing a coyote from the trap of a Government hunter, a resident of Yakima, Wash., was fined \$52.50, according to District Agent John Finley. When the Bureau trapper, W. B. Gunnoe, returned to his trap set, he found shotgun shells near the empty trap and a trail of blood leading from the trap to the spot where the thief had left his car. The state game protector, who had been asked to be on the lookout for the seller of a pelt with shotgun holes, apprehended the man when he brought in the pelt to collect the bounty. He was fined for making fraudulent application for a State bounty and theft of the pelt.

Black Bear Turns Man-Chaser.--A black, medium-sized, female bear attacked a herder of La Barge, Wyo., without provocation, treed him, and gave him a 2-hour fight in the tree top before aid came, District Agent Adolph S. Hamm reports. A camp-tender shot the bear at 150 yards, managing to cripple her, whereupon the bear turned on the rescuer and was brought down with the last shot when but 30 feet away. It was reported that a bear in that vicinity, no doubt the same animal, had treed two other men. No explanation could be given for the bear's viciousness, since it had no cubs.

Personnel.--Harold Haecker left Washington, D.C., on March 25 to return to his official station in Sacramento, Calif., after spending approximately 3 months on detail in the Washington office assisting with the administrative activities in the division.

Assistant District Agent Ernest M. Mills, formerly stationed at Amherst, Mass., is conducting rodent-control operations in New Jersey and Delaware, with headquarters at the Short Course Building, New Jersey College of Agriculture, New Brunswick, N.J.

Weldon B. Robinson, carrying on rodent-control operations in New York under the supervision of District Agent George B. Lay, has new headquarters in Comstock Hall, Cornell University, Ithaca, N.Y.

Malcolm N. Allison was transferred April 1 from the Division of Predator and Rodent Control, Arizona district, to the Division of Wildlife Refuges as refuge superintendent on the Cabeza Prieta and Kofa game ranges in Arizona.

On April 1, District Agent George E. Holman, in charge of the Nevada district, was transferred to Boise, Idaho, to assume charge of the predator and rodent control projects conducted in the Idaho district. Mr. Holman has had long experience in the Biological Survey control projects, having been in charge of the predatory animal control work in Utah for many years prior to assuming charge of the work in the Nevada District.

G. Hammond Hansen assumed charge of the Nevada district as district agent on April 1 and will transfer to Reno, Nev., after assisting Mr. Holman in becoming acquainted with the Idaho district. Mr. Hansen has been acting in charge of the control projects in Idaho for sometime. He had been engaged in control operations in the Idaho district since February 18, 1932.

Owen W. Morris, Jr., district agent in the Idaho district has been transferred from Idaho Falls to Boise, as assistant district agent.

Lawrence M. Cheney was transferred on February 23 from Great Falls, Mont., to Fargo, N.Dak., where he will act as junior district agent under Louis Knowles of the Dakota district.





# THE SURVEY

ISSUED MONTHLY FOR THE PERSONNEL OF THE BUREAU OF BIOLOGICAL SURVEY, U. S. DEPARTMENT OF AGRICULTURE  
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## GENERAL NOTES

Bureau Transferred to Interior Department.--Under the President's second reorganization plan the Biological Survey is to be transferred to the Department of the Interior on July 1. "In the meantime the work of the Bureau is to continue in all respects as if no change were contemplated," Dr. Gabrielson stated in a memorandum dated May 15. "Secretary Ickes has authorized me to say that the personnel of the Bureau will not be disturbed and that the work will continue as now carried on. He is much interested in our conservation activities and I am sure will make every effort to help us to go forward on the program on which we have been working the past few years."

Dedicates Patuxent Refuge.--The nation's first national wildlife experiment station, the Patuxent Research Refuge, at Bowie, Md., was formally dedicated by Secretary of Agriculture Henry A. Wallace on Saturday June 3 as some 450 people witnessed the ceremony, which was sponsored by the National Wildlife Federation. Addresses were made by the Hon. Key Pittman, chairman, U. S. Senate Committee on Conservation; Hon. Harry B. Hawes, former vice-chairman, U. S. Senate Committee on Conservation; Hon. A. Willis Robertson, chairman, House Committee on Conservation; and Dr. Gabrielson. Carl Shoemaker, secretary of the National Wildlife Federation, introduced the speakers.

In his dedicatory speech, Secretary Wallace in part said:

"Today we are dedicating much more than this single area, with its experimental grounds, its watercourses and fields, and its laboratories. They mark also the culmination of years of patient effort to plan a national wildlife-restoration program that includes provisions for the necessary basic research and scientific work. There is opportunity to coordinate it with plans to acquire and restore elsewhere denuded and submarginal lands for the production of wildlife." He added that the research refuge is the "manifestation of a national determination and a national ability to conserve and administer wisely the organic resources and products of the soil--a priceless heritage to the generations of Americans yet to come."

Dr. Gabrielson closed the dedication exercises, saying that the refuge was the result of the efforts of many people from many organizations. He praised the work of those who helped to make this dream for a wildlife experiment station a reality. Dr. Gabrielson, explaining the scope of the project, added that the Bureau hopes that the Patuxent will become the key experimental station in wildlife, where authorities throughout the country will come to observe and promising Survey workers will be trained before being sent into the field to represent the Bureau.

The project program for the 3,000-acre refuge is intended to benefit wildlife in general; to find out under what conditions wildlife may be produced on wastelands retired from agriculture; and to determine the interrelationships of agriculture and forestry practices on wildlife. Administrative control of the refuge is vested in the Division of Wildlife Research through the personal supervision of Dr. L. C. Morley, superintendent.

Following the exercises, guests visited various parts of the refuge and joined in a barbecue luncheon. Members of the committee on arrangements were: Leo K. Couch and Dr. Morley, Biological Survey; Earl C. Sanford, National Agricultural Research Center; and Carl D. Shoemaker, National Wildlife Federation.

Dr. Witmer Stone.--Dr. Witmer Stone, who as a member of the staff of the Philadelphia Academy of Natural Sciences for 51 years was closely identified with the growth and activities of the Biological Survey, died on Tuesday, May 23, at the Germantown Hospital near his home at 452 Church Street, Germantown, Pa. He was a past president of the Delaware Valley Ornithological Club, The American Ornithologists' Union, and the American Society of Mammalogists, and honorary member of the British Ornithologists' Union and many other leading scientific societies of North America and Europe.

Dr. Stone's writings embrace a wide field of natural history of birds, mammals, and other vertebrate and invertebrate groups. From 1912 to 1936 he was editor of the official organ of the American Ornithologists' Union, "The Auk," which bears the impress of his kindly nature and thorough scholarship during this period of a quarter century. His sympathetic insight and delightful style of presentation are well illustrated in one of his most recent publications, a 2-volume work entitled "Bird Studies at Old Cape May," giving results of more than 20 years of observation and study of birds in the vicinity of his summer home at Cape May, N. J. The National Association of Audubon Societies recently named after him a wildlife sanctuary at Cape May Point.--W. B. B.

Dr. Joseph Grinnell.--A heart attack proved fatal on May 29 to Dr. Joseph Grinnell, director of the Museum of Vertebrate Zoology, University of California, and a close cooperator for many years in the scientific work of the Bureau. Dr. Grinnell was internationally known as a zoologist but specialized in western ornithology and mammalogy. He was instrumental in establishing the research center at the University of California that conducted biological investigations restricted mainly to the Far West. The results of these studies have been of great value in supplementing those of the Survey in a wider field.

Dr. Grinnell had long been recognized as a leader of modern thought touching the zoological sciences. His many publications discussed widely varied subjects. As professor and as director of the museum at the University of California, many students came under his guiding influence in their professional training. He had numerous friends and acquaintances in the Survey.--E. A. G.

Elected to A. O. U.--At the annual meeting of the American Ornithologists' Union, held in Berkeley, June 19 to 24, W. L. McAtee was elected member of the Council, Dr. Lawrence E. Hicks reelected secretary, and W. L. Kubichok elected to the Member class.



Speaks at Vassar, World's Fair.--On May 11 Dr. Gabrielson spoke before the Wilmington, Del., Rotary Club on "Wildlife Conservation." He addressed a group of Vassar College students in Poughkeepsie, N. Y., on May 16. Two days later he attended a meeting of the National Life Conservation Society, which was celebrating "Conservation Day" at the New York World's Fair. Dr. Gabrielson spoke on "Progress Made in Conserving the Wildlife of Our Country."

To Address A. O. U. Convention.--Dr. Gabrielson is scheduled to address the annual convention of the American Ornithologists' Union, which will be held at Berkeley, Calif., on June 19 to 21. His topic will be "The Refuge Program of the Biological Survey." Other Bureau employees who probably will attend the convention are W. L. McAtee, F. C. Lincoln, E. E. Horn, Johnson A. Neff, William H. Marshall, Stanley Jewett, Dr. Lawrence E. Hicks, and Peter Z. Van Huizen.

Mr. Jewett will speak on "Birds of Some North Pacific Refuge Islands," and Mr. Van Huizen on "Birds of the Sacramento Migratory Waterfowl Refuge."

Leaving Washington June 4, Dr. Gabrielson will visit many refuges en route to California. Present plans include stops at the Upper Mississippi River Wildlife and Fish Refuge, Minn.; Upper Souris, Lower Souris, and Des Laes Refuges, N. Dak.; and Mud Lake and Rice Lake Refuges, Minn. On June 11, he will speak at a meeting of the North Dakota Wildlife Federation Chapter at Kenmore.

Following the A. O. U. convention, Dr. Gabrielson will attend the annual meeting of the Western Game Commissioners, at Monterey, and that of the International Association of Fish, Game, and Conservation Commissioners, which will be held in San Francisco from June 26 to July 1.

Appointed Acting Director.--Effective May 8, John C. Gatlin was designated Acting Regional Director of Region 3. Mr. Gatlin was transferred from his post as District Agent, Division of Predator and Rodent Control, with headquarters in Albuquerque, N. Mex.

Wildlife Stamps Popular.--More than \$200 worth of wildlife stamps, albums, and "Ding" Darling's silent sermons were purchased by Department of Agriculture employees in Washington offices, according to Guy W. Lane, of the Federal Aid Division, who conducted the sales in the Bureau. "We received our supply at the close of National Wildlife Week," said Mr. Lane, "and while it was a late start, we feel that our efforts have not been in vain. The report demonstrates the interest and the popularity behind the wildlife movement."

Mr. Lane reported that requests for stamps are still being made. Other than a short paragraph in the Exchange, Recreation Association publication, no effort was made to conduct a sales publicity campaign.

New Work on Migration Published.--A new book, "The Migration of American Birds," by Frederick C. Lincoln, was released on June 9 by Doubleday, Doran and Company, Inc., New York. The volume gives an up-to-date summary of the knowledge of bird migration and includes 12 colored plates by Louis Agassiz Fuertes and 22 maps. The book begins with an historical account citing the earliest known references to the semiannual movements of birds, and

also discusses the origin of migration, orientation (with accounts of the use man has made of this faculty by employing birds as messengers), the influence of weather on migration, the many dangers that beset migratory birds in their travels, and mass and individual movements. The little-known flights of sea birds is discussed in a chapter entitled "Polagic Migration."

## ADMINISTRATION

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (AFO) series since the last issue (February-April) of THE SURVEY.

- No. 21. Revised. Amendment No. 9. Adequate competition in field bid solicitations. (March 16.)
- No. 21. Revised. Amendment No. 10. Clause to be included in advertisements involving the application of freight rates in determining award. (April 15.)
- No. 21. Revised. Amendment No. 11. Instructions in solicitation and acceptance of bids. 1. Provisions of the Eight-hour Law to be included in all contracts which may involve employment of laborers and/or mechanics. 2. Revised texts of Delays-Damages and Delays-Liquidated Damages sheets. (May 3.)
- No. 27. Revised. Amendment No. 1. Classification of items chargeable to the limitation on maintenance, upkeep, and repair of passenger-carrying vehicles. (May 18.)
- No. 39. Revised. Supplement No. 1. Passes required for Government employees and Government-owned vehicles in crossing the San Francisco-Oakland bridge. (May 26.)
- No. 106. Amendment No. 2. Substitution of another work day for Sunday under certain conditions. (March 22.)
- No. 111. Amendment No. 2. Charges for forwarding of telegrams. (March 22.)
- No. 180. Revised. Amendment No. 1. Preservation of stomachs of predatory mammals and birds killed in connection with control operations on refuges. (May 6.)
- No. 195. Amendment No. 2. Preparation of Central Supply requisition Form AD-14. (March 24.)
- No. 221. Amendment No. 5. Recording and reporting personal injury and property-damage accidents.--Department forms adopted. (March 21.)
- No. 222. Revised. Postage stamps for official use--procurement, vouchering, accountability. (March 17.)
- No. 229. Amendment No. 1. Certification of vouchers. (May 16.)
- No. 229. Amendment No. 2. Standard Form 1080 vouchers--execution of "Certificate of Office Billed." (May 16.)
- No. 263. Information required in obtaining authority for disposition of surplus motor-propelled and heavy duty equipment. (March 20.)
- No. 264. Delivery and endorsement of Government salary checks. (May 10.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 14. Amendment No. 3. Blanket clearance for the purchase of special lubricating oils for certain diesel-powered equipment until June 30, 1939. (May 3.)
- No. 32. Supplement No. 10. Contract for service-station deliveries of gasoline, lubricating oil, and lubrication service in the North-eastern States for the period April 1 to June 30, 1939, inclusive. (March 29.)
- No. 32. Supplement No. 11. Contracts for service-station deliveries of gasoline and lubricating oil in the States of Georgia, Florida, Alabama, and Mississippi for the period ending June 30, 1939. (April 5.)
- No. 32. Supplement No. 12. Contract for service-station deliveries of gasoline and lubricating oil in the State of Ohio for the period April 1 to June 30, 1939. (April 10.)
- No. 35. Supplement No. 3. Contracts for the procurement of blasting supplies for the period April 10 to June 30, 1939 (Class 4, Supplement No. 5). (May 1.)
- No. 78. Amendment No. 1. Contracts for the procurement of instruments of precision and accessories and parts for the period April 1 to December 31, 1939 (Class 18, Supplement No. 2). (April 29.)
- No. 79. Mandatory contract concerning procurement of machine tools, small machinery, and accessories and parts, for the period ending February 29, 1940 (Class 40). (March 10.)
- No. 80. Changes in Procurement Division Contracts. (March 14.)
- No. 81. (Supersedes No. 55 dated November 31, 1938.) Procurement of fire extinguishers. (March 16.)
- No. 81. Amendment No. 1. Procurement of carbon dioxide and liquid-and-gas fire extinguishers for the period April 1, 1939, to March 31, 1940 (Class 58). (April 3.)
- No. 82. Contracts for the procurement of photographic equipment and supplies for the period January 1 to December 31, 1939 (Class 18, Supplement No. 1). (March 30.)
- No. 83. Contracts for the procurement of pipe threading sets for the period March 15 to July 31, 1939 (Class 41, Supplement No. 1). (April 4.)
- No. 84. (Supersedes No. 50 dated October 13, 1938.) Mandatory contracts for the procurement of tires and tubes for use on Government-owned automobiles and tractors, etc., during the period April 1, 1939, to September 30, 1939 (Classes 8 and 83). (April 6.)
- No. 85. Issuance and acceptance of bids involving payment from funds expiring June 30, 1939. (April 15.)
- No. 86. Changes in Procurement Division Contracts. (April 19.)
- No. 87. Procurement of asbestos gear and track roller lubricant. (April 22.)
- No. 87. Amendment No. 1. (1) Asbestos gear and track roller lubricant, (2) other types of grease lubricant. (May 27.)
- No. 88. Changes in Procurement Division Contracts. (May 1.)
- No. 89. Open market purchases of service-station deliveries of gasoline and lubricating oil. (May 22.)
- No. 90. Changes in Procurement Division Contracts. (May 26.)



The following memoranda to field officers have been issued in the new "Boat Maintenance Memoranda" series:

- No. 1. Care and maintenance of motor boats. (Formerly designated as AFO No. 231, dated April 15, 1938.)
- No. 2. Painting instructions for boats. (April 1.)
- No. 3. Care and cleaning of gasoline tanks in motor boats. (April 1.)
- No. 4. Laying up motor boats in storage. (April 1.)

#### PUBLIC RELATIONS

Addresses New Jersey Sportsmen.--Col. Sheldon attended a meeting of the Southern New Jersey Sportsmen's Association, held in McKee City on April 28, and discussed the Survey's wildlife restoration program. Nearly 200 persons attended the meeting.

Broadcasts.--Farm and Home broadcasts by Howard Zahniser during May included talks on "Fish-eating Birds," on May 5 and "Why Have the Ducks Increased?" on May 12.

On May 28 Mr. Zahniser spoke on an American Wildlife Institute "In Memoriam" program broadcast by the Mutual Broadcasting System. After calling attention to Memorial Day, the announcer said: "It is also well for us to remember that certain kinds of wildlife have been sacrificed in the making of our great nation." Mr. Zahniser then discussed the passenger pigeon, the great auk, the Labrador duck, the Eskimo curlew, and the heath hen. He spoke also of species in danger of extinction today and said in conclusion: "If the public and all the agencies concerned continue to cooperate as they have within the past few years, it ought to be possible to conserve all our wildlife, and even restore it to something approaching its earlier abundance. If this does not happen, such in memoriam programs as this are futile."

On June 9 Mr. Zahniser spoke on the National Farm and Home program on "Commencement Time for Wildlife Students," telling of the work of 14 graduate students who are receiving M. A. degrees at schools where cooperative wildlife research and demonstration units are maintained. On June 15 he talked about "Wildlife in Michigan's Soney Marshes." Scheduled for June were a talk on results of recent research at the cooperative units, for June 23, and a report of the second big-game inventory, for June 30.

Transferred.--Ludwig Caminita, Jr., who had been employed in the Editorial Section since April 1, 1938, was transferred to the Section of Current and Visual Information on May 8 to write Bureau statements for the press and edit THE SURVEY. Before coming to the Biological Survey, he taught English and general science in the National Training School for Boys, Department of Justice. Mr. Caminita holds degrees of B. S. in zoology and M. A. in psychology from the George Washington University, Washington, D. C. He has had considerable experience on college publications, as free lance writer for the press, editing and publishing newspapers and yearbooks for the Training School, and writing a column for a newspaper.

Resigns.--Miss Ethel B. Homsher, junior-clerk stenographer in the Section of Current and Visual Information, resigned effective June 20 to accept a position as an assistant in the promotion department of a Washington real estate company. She joined the Bureau in December 1938, transferring from the Office of Experiment Stations.

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Wildlife of the Atlantic coast salt marshes. By W. L. McAtee, technical adviser and research specialist, Office of the Chief. Circular No. 520, 28 pp. March 1939. Received April 21.
- The wildlife-restoration program under the Pittman-Robertson act of 1937. By A. M. Day, chief, Division of Federal Aid in Wildlife Restoration. Miscellaneous Publication No. 350, 12 pp. May 1939. Received May 6.
- Food of game ducks in the United States and Canada. By A. C. Martin and F. M. Uhler, associate biologists, Section of Food Habits, Division of Wildlife Research. Technical Bulletin No. 634, 157 pp. March 1939. Received May 8.
- Food habits of North American diving ducks. By C. Cottam, senior biologist, in charge Section of Food Habits, Division of Wildlife Research. Technical Bulletin No. 643, 140 pp. April 1939. Received May 10.
- Regulations relating to game, land fur animals, and birds in Alaska, 1939-40. Alaska Game Commission Circular No. 17, 34 pp., illus. (map). June 1939. Received June 20.
- Directory of field activities of the Bureau of Biological Survey, 1939. Miscellaneous Publication No. 343, 117 pp., illus. June 1939. Received June 21.
- Seasonal fox rations and quantities to feed. By C. F. Bassett, Director, United States Fur Animal Experiment Station, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-130, 3 pp. April 1939. Received April 26.
- Suggestions on attracting birds, with references to available literature. Wildlife Research and Management Leaflet BS-131, 5 pp. April 1939. Received May 1.
- Some California wildlife-forest relationships. By E. E. Horn, biologist, Section of Wildlife Surveys, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-132, 5 pp. April 1939. Received May 1.
- A preliminary investigation of the food habits of the mourning dove in Alabama. By Walter Rosene, Jr., graduate scholar, Alabama Cooperative Wildlife Research Unit, Auburn, Ala. Wildlife Research and Management Leaflet BS-133, 10 pp. April 1939. Received May 4.
- A summary of the gray squirrel investigation in southeastern Ohio. By F. B. Chapman, former research fellow of the Ohio Cooperative Wildlife Research Unit, Section of Wildlife Surveys, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-134, 9 pp. April 1939. Received May 13.
- Personnel in Federal game-law enforcement. By W. E. Crouch, chief, and C. A. Leichhardt, assistant chief, Division of Game Management. Wildlife Research and Management Leaflet BS-135, 8 pp. May 1939. Received June 2.

The waterfowl situation: 1938-39. Prepared in the Section of Distribution and Migration of Birds, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-136, 18 pp. May 1939. Received May 23.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

- Aldous, C. M. A melanistic snowshoe hare from Maine. Jour. Heredity 30 (1): 25-26, illus. Jan. 1939.
- Bennett, L. J. (With P. F. English, junior author). The fall foods of ring-neck pheasants and bobwhites. Pa. Game News 10 (1): 8, 9, 39, illus. Apr. 1939.
- Burleigh, T. D. (With G. M. Sutton, senior author). A new screech owl from Nuevo Leon. Auk 56: 174-175, Apr. 1939.
- Cottam, C. Late occurrence of nighthawk in Connecticut. Auk 56: 188, Apr. 1939.
- and Knappen, P. Food of some uncommon North American birds. Auk 56: 138-169, Apr. 1939.
- Gabrielson, I. N. Range restoration. Bird-Lore 41: 63-66, illus. Mar./Apr. 1939.
- Burning wildlife. Amer. Forests 45: 186-188, illus. Apr. 1939.
- Goldman, E. A. Two new pocket gophers of the genus Heterogomys from Mexico. Jour. Wash. Acad. Sci. 29: 175-177, Apr. 15, 1939.
- Remarks on pocket gophers, with special reference to Thomomys talpoides. Jour. Mammal. 20: 231-244, May 14, 1939.
- A substitute name for Perognathus penicillatus scorsus. Jour. Mammal. 20: 257, May 14, 1939.
- Jackson, H. H. T. Polar bear in Lake St. John District, Quebec. Jour. Mammal. 20: 253, May 1939.
- A record black bear. Jour. Mammal. 20: 252-253, May 1939.
- Kalmbach, E. R. American vultures and the toxin of Clostridium botulinum. Jour. Amer. Vet. Assoc. 94: 187-190, Mar. 1939.
- Oberholser, H. C. The season (ornithological); Washington (D. C.) region. Bird-Lore 41: 120-121, Mar./Apr. 1939.
- Salter, J. C., II. (With K. F. Lagler, junior author). The morganer--trout fancier. Amer. Wildlife 28 (1): 33-36, illus. Jan./Feb. 1939.
- Saylor, L. W. Two new California Phyllophaga. Ent. Soc. Wash. Proc. 41: 88-92, illus. Mar. 1939.
- Schoffer, V. B. The Os clitoridis of the Pacific otter. Murrelet 20: 20-21, illus. Jan./Apr. 1939.
- Scott, T. G. Number of fetuses in the Hoy pigmy shrew. Jour. Mammal. 20: 251, May 1939.
- (With L. F. Solko, junior author). A census of red foxes and striped skunks in Clay and Boone Counties, Iowa. Jour. Wildlife Mgmt. 3: 92-98, Apr. 1939.
- Sheldon, H. P. Guns and game: Humane measures; criticisms; firearms regulations; a big gun. Country Life and Sportsman 75 (4): 26, 30, 33 illus. Feb. 1939.



Sheldon, H. P. Guns and game: Gunga Din reviewed: telescopic sight; Weaver 'scopes; too much power; concerning ruffed grouse. Country Life and Sportsman 75 (6): 26, 115, 116, illus. Apr. 1939.

----- Guns and game: Cure for blown patterns; monotony; vicious killing; a true sportsman. Country Life and Sportsman 76 (1): 17, 24, illus. May 1939.

Sperry, C. C. Food habits of poglog coyotes. Jour. Mammal. 20: 190-194, illus. May 1939.

Taylor, W. P. Wildlife conservation in the farm and ranch program. Tex. A. and M. Col. (mimeographed). 6 pp. Jan. 1939.

Zahniser, H. Indoors and out. Nature Mag. 32: 247, 289, May 1939.

Press and Radio Information and Addresses, copies of which (chiefly in mimeograph) may be obtained from the Division of Public Relations, have been issued as follows:

- Texas ranch now a waterfowl refuge. Press statement 1801-39. Released April 25.
- New circular on wildlife of Atlantic coast marshes. Press statement 1813-39. Released April 27.
- Buyers and killers of wild ducks sentenced. Press statement 1850-39. Released May 2.
- Federal refuge for Pond Oreille deer established in Stevens County, Wash. Press statement 1863-39. Released May 5.
- Big Lake Migratory Bird Refuge in Arkansas being improved. Press statement 1717-39. Released May 15.
- Resident Alaska trappers protected from outsiders. Press statement 1971-39. Released May 20.
- Necedah waterfowl refuge established in Wisconsin. Press statement 2006-39. Released May 23.
- Describes State-aid program for wildlife. Press statement 1990-39. Released May 25.
- Bulletin of wildlife bureau describes food of game ducks. Press statement 1972-39. Released May 28.
- Foods of diving ducks described in bulletin. Press statement 1991-39. Released May 28.
- Mourning dove food studied for better game management. Press statement 2068-39. Released June 1.
- Remarks of Secretary Henry A. Wallace on the occasion of the dedication of the Patuxent Research Refuge. Press statement 2082-39. Released June 3.
- U. S. Biological Survey reports results of waterfowl inventory. Press statement 2032-39 (illus.). Released June 4.
- U. S. opens drive on duck bootleggers and buyers. Press statement 2173-39. Released June 12.
- Wildlife demonstration area to be developed in Rhode Island. Press statement 2173-39. Released June 17.
- Nine are fined for buying wild ducks. Press statement 2175-39. Released June 17.
- Submarginal land areas become wildlife refuges. Clip sheet 1087. Released April 30.
- Fur specialists work for increase in karakul sheep. Clip sheet 1088. Released May 7.

1939 inventory shows ducks more plentiful. Clip sheet 1090. Released May 21.  
Wildlife as a farm crop. Clip sheet 1092. Released June 4.  
Game duck diet includes many plants and animals. Clip sheet 1094. Released June 18.  
Fish-eating birds. Radio talk by Howard Zahniser, National Farm and Home Program. May 5.  
Why have the ducks increased. Radio talk by Howard Zahniser, National Farm and Home Program. May 12.  
Game laws and their enforcement. Radio talk by Chester A. Leichhardt, National Farm and Home Program. June 1.  
Commencement time for wildlife students. Radio talk by Howard Zahniser, National Farm and Home Program. June 9.  
Wildlife in Michigan's Seney marshes. Radio talk by Howard Zahniser, National Farm and Home Program. June 15.  
National Wildlife Week. Homemakers' Chat. March 20.  
Bird questions and answers. Homemakers' Chat. June 6.  
Plant food for ducks. Farm flashes (eight regionalized releases.) No date.

## WILDLIFE RESEARCH

### Wildlife Surveys

Field Work in Southeast.--In taking advantage of the opportunity to attend the meeting of the American Society of Mammalogists held April 4 to 7 at Baton Rouge, La., biologists of this Section completed several important field researches and inspections in the southeastern States. Dr. Jackson went directly from Washington, D. C., to Auburn, Ala., where he conferred with Bureau cooperators. With Dr. A. M. Pearson, leader of the Alabama Cooperative Wildlife Research Unit, on April 1 he visited members of the Alabama Department of Conservation at Montgomery and inspected the recently established trial demonstration area for bobwhite near Marion Junction. The next day he visited the Noxubee Wildlife Refuge near Starkville, Miss.

In New Orleans Dr. Jackson spent April 3 at the Southern Forest Experiment Station, the Biological Survey Regional Office, and Louisiana Department of Conservation. After the mammal meetings, Drs. Jackson and Pearson went to Florosa, Fla., where they met Major E. A. Goldman and A. H. Howell on April 9 for field work on Santa Rosa Island. Drs. Jackson and Pearson continued that day toward Tallahassee, stopping enroute at the Saint Marks Migratory Waterfowl Refuge. At Tallahassee they conferred with members of the Florida Commission of Game and Fresh Water Fish. On April 11 they visited Herbert L. Stoddard and inspected his game management work at the Sherwood Plantation, Thomasville, Ga., after which they returned to Auburn, from where Dr. Jackson continued to Washington.

Major Goldman and Mr. Howell continued their studies of the mammals of Santa Rosa Island and also conducted biological work near Apalachicola, Fla., from where Mr. Howell returned to Washington. Major Goldman went to the Blackbeard Island Refuge to study the whitetail deer problem before returning to headquarters on April 24.

Visits Ohio Unit.--Mr. Couch returned April 23 from a 4-day inspection trip covering the work of the Ohio Cooperative Wildlife Research Unit at Ohio State University, Columbus. An informal meeting of the Administrative Committee was held to consider policies, budget, and plans for future cooperation. Present at the meeting was Dr. Lawrence E. Hicks, unit leader, who discussed his research program. Members of the committee are Don A. Waters, director, Ohio Division of Conservation; John F. Cunningham, dean, College of Agriculture; and Mr. Couch, representing the Bureau of Biological Survey and the American Wildlife Institute.

During his visit, Mr. Couch conferred with Dr. Raymond C. Osburn, head of the Department of Zoology. Later, a meeting was held with graduate students interested in wildlife problems. Mr. Couch left Columbus for a field trip through several counties where he inspected the unit's work on fox squirrels and ring-necked pheasants, as well as the raccoon project at the Milan Farm under the direction of Dr. E. D. Martin. Before returning to Washington, Mr. Couch spent some time at Pymatuning Lake, observing the waterfowl, the studies being made on aquatics, and the changes in vegetation taking place in a new man-made waterfowl area.

Takes Extended Trip Through West.--Leaving Washington on June 18, Mr. Couch will make a 6-weeks' tour through the West, visiting officials and cooperators of the Bureau. On June 19, he will confer with <sup>Dr.</sup> Paul D. Dalke, leader of the Missouri Cooperative Wildlife Unit, and officials of the University of Missouri, at Columbia. The next day he will go to Jefferson City to discuss Bureau problems with I. T. Bode, and other members of the Missouri Conservation Commission.

From Missouri, Mr. Couch will go to the Wichita Mountains Wildlife Refuge, Okla., for a 2-day conference with Charles H. Rouse and Frank B. McMurry. On June 24, he will probably be in Albuquerque, N. Mex., where he will meet with Acting Regional Director John C. Gatlin and other regional officials. He will leave New Mexico in time to attend the meetings of the International Association of Fish, Game, and Conservation Commissioners in San Francisco June 26 to July 1.

After the San Francisco convention, he will go to Corvallis, Oreg., to discuss work of the Oregon Cooperative Wildlife Unit with Dr. Arthur S. Einarson, unit leader. At Portland, a few days later, Mr. Couch will meet with the Regional officials, A. W. Moore, in charge of forest-wildlife research, and members of the Forest Service. These meetings probably will be followed by field trips with Forest Service and Bureau personnel.

Conference at Cornell University.--The newly established cooperative study of game bird physiology was the subject of a conference held in Ithaca, N. Y., on May 10, between Dr. Jackson; Dr. F. B. Hutt, head of the Department of Poultry Husbandry; Gardiner Bump, superintendent of Game, New York State Conservation Department; and Dr. W. H. Long, research worker of the Section of Wildlife Surveys. Others in attendance included Dr. J. H. Bruckner, of Cornell University, and R. W. Darrow and Robert Perry, of the State Conservation Department. The accepted program includes research on the normal physiological reactions of both wild and artificially propagated pheasants up to 12 weeks of age, and research to determine the normal physiological re-



actions of adult pheasants, both wild and artificially reared, to various environmental conditions. Dr. Jackson also conferred with men in the Zoology Department and was a guest at the Research Club dinner meeting that evening.

200 Forest Clearings on Refuge.--Over 200 clearings, ranging from 1/2 to 10 acres, have been created by the Forest Service on the Big Levels Game Refuge, George Washington National Forest, Va. The clearings are part of the wildlife management plan suggested by the Biological Survey in 1936. The refuge was inspected by Dr. Jackson and Mr. Couch and by A. L. Nelson, of the Food Habits Section, on May 16 to 18.

The Big Levels is largely a bear oak type on the summit, of little timber value, with mixed hardwoods and pine in the lower elevations. The clearings are showing uses made by deer, ruffed grouse, wild turkeys, quails, and other wildlife forms.

On the inspection trip were Dr. H. L. Shantz, chief, Wildlife Division, Forest Service; R. M. Evans, regional forester; M. A. Mattoon, assistant regional forester; B. C. Park, regional wildlife technician; M. C. Howard, forest supervisor; Talbott E. Clark, wildlife technician for the George Washington National Forest, under whose personal direction the clearings were created; and other George Washington National Forest officers. Also with the inspection group were C. H. Nolting, chairman, Virginia Commission of Game and Inland Fisheries; S. P. Goodloe, member of the Commission; C. O. Handley, leader, Virginia Cooperative Wildlife Research Unit; and four graduate students from the Virginia unit.

Plans were discussed for other cooperative studies of this type of forest manipulation for wildlife use.

New Marine Shells Described.--As a result of the Bureau's work in the Aleutian Islands, there appeared in a recent issue of "The Nautilus" a description of two new species of marine shells, Anabathron muriei, from sea otter droppings, and Liocyna schefferi from dredgings.

Conducts Survey on Skis.--While making a wildlife survey on the Boise National Forest, Idaho, during the first few days of April, William H. Marshall, junior biologist, covered some 65 miles of high mountain area on skis. Very little evidence of fur bearers or other wildlife was found. Snow surveys made at James Creek Summit and Trinity Guard Station revealed an alarming shortage of snow water storage on these watersheds.

Farmers Raise Wild Skunks in Attic.--Two farmers in Van Buren County, Iowa, claim to have successfully reared wild spotted skunks in the attics of their homes, according to a report received from Wilfred Bayton Crabb, graduate research assistant at Iowa State College. An inventory of more than 16 sections of land, comprising about 60 farms in the county, indicated that spotted skunks had recently inhabited approximately 25 percent of the farmsteads. About 75 percent of the farmsteads appeared to have housed these animals at some time.

Although some of the skunks are trapped, they are usually unmolested because they are considered to be good ratters. Buildings housing skunks are obviously free of heavy rat populations.

## THE SURVEY

On the 16 sections of land observed, spotted skunks inhabited straw stacks 3, attics 3, barns 7, abandoned well 1, fence row 2, and hollow tree 1. One of the attics was that of a rural school house. The teacher and pupils proved equally adept in describing the chirping and squealing, which Seton calls the "song" of the spotted skunk.

Forest-Game Relationships in Maine.--Clarence M. Aldous, leader of the Maine Cooperative Wildlife Research Unit, spent the last 3-1/2 days in March in the forest regions immediately north of Mooshead Lake to observe wintering conditions of deer and moose there. Field work was done on snowshoes. In openings where the sun had a chance to settle the snow, it measured 40 inches in depth, but under the black growth the snow was at least a foot deeper. Mr. Aldous was accompanied by Graduate Assistant Montgomery and State Game Warden Roberts. In the areas between Kodadjo and Ripogonus Dam the deer were moving around considerably, taking advantage of the layers of crust beneath the last snows. It was evident that the deer could walk easily, but when running or jumping they would break through and flounder.

At least 80 percent of the available cedar was browsed. To a lesser extent deer were browsing on red and striped maple. There was no evidence of, balsam, pine, or spruce being eaten. No concentrated yarding areas were observed. An unusual abundance of fox tracks were observed. While they saw but one deer and no signs of kills or dead animals, the deep snow is almost certain to take its toll of young deer before the spring season is past. Some 25 miles north of Kodadjo, the deer were also moving around considerably. An ample supply of cedar was available here, and no excessive browsing was observed.

Mr. Aldous states that they were unable to locate the small band of moose that in the past has been seen in the vicinity of the Spencer Mountains. They did find, however, one rather fresh track of a moose near Black Pond. Fox and bobcat tracks were common on both areas visited, but no deer kills were found. From the tracks in the snow it would appear that the snowshoe hares were rather common. Very few signs of either the ruffed grouse or the spruce grouse were observed; only two specimens of the former and one of the latter were seen. It was evident that in this general region, at least, snowshoe hares were much more in evidence than were either of the grouse species. Mr. Aldous also reports that his car was caught in one of the spring blizzards and had to be hauled out by a tractor. The men traveled only 17 miles in 7 hours because of the drifts and poor roads.

Epidemic Strikes Purple Finches.--An exceptional number of purple finches settled around the University of Maine campus during March, according to Mr. Aldous. Many of the birds died, however, though the weather was not cold enough to kill them by freezing. The exact cause of death was not determined. Examining 16 specimens, Dr. E. C. Nelson, of the University of Maine staff, isolated the blood parasite Microfilaria from 1 bird, which would not seem to be the real cause for the epidemic. Mr. Aldous caught and banded 62 of these finches, 2 of which were later found dead. (See stories on pages 116 and 123.)

Check Birds on Singing Grounds.--The number of singing males on the woodcock singing grounds at Calais, Maine, was approximately the same as last year (20 percent greater than in 1937), according to Howard L. Mendall, assistant project leader of the Maine Cooperative Wildlife Unit, who began field work on the censused areas on April 20. This report, says Mr. Aldous, is quite significant because of the adverse spring and late winter conditions. The woodcock started coming into the State as early as March 2, when 2 to 4 feet of snow covered their breeding grounds. Even as late as the first week in April the snow in Washington County was 2 feet deep on the level and 3 to 4 feet in the woods. Both the early and late-flight birds were compelled to congregate on areas where springs or seeps were to be found, because these were the only areas on which the birds could find any of their natural foods.

Studies Woodcocks in Maritime Provinces.--At least 18 woodcocks were found dead in the city limits of St. John, New Brunswick, and in nearby sections, according to John Holman, an ardent woodcock hunter of that town. While covering parts of three Maritime Provinces on May 7 to 11, Mr. Aldous, Mr. Mendall, and Atlantic Flyway Biologist Harold S. Peters stopped at St. John to confer with Mr. Holman.

The three Bureau representatives heard about dead woodcocks being found in other areas of the Atlantic flyway. In Maine, especially along the coast in the vicinity of Machias and Dennysville, reports had been received of at least eight birds being found dead at the same time. In two areas along the flyway 18 dead birds were reported. These facts indicate, in Mr. Aldous' opinion, that many more of these breeding birds must have perished elsewhere. (See story on page 115.)

At Moncton, New Brunswick, the Bureau employees contacted Jack Mayer, another enthusiastic woodcock observer and hunter. Mr. Mayer stated that he had been in the coverts with his dogs during all his spare moments and that in an area where last year he had observed 18 breeding birds, so far this year he had only seen 3. He was greatly alarmed about the situation. In and around Moncton there are vast areas of good woodcock coverts. The season, according to Mr. Mayer, was from 3 to 4 weeks later than last year. He believes that many breeding birds perished for lack of food coupled with late freezing weather. He also believes that many woodcocks that would ordinarily have nested in Moncton had remained to breed in the United States.

Messrs. Aldous, Mendall, and Peters visited Wolfville, Nova Scotia, and noted from personal reports of Robie W. Tufts, chief Federal migratory bird officer, that there was a shortage of breeding birds. A short trip was made on Prince Edward Island. At Charlottetown, through conference with Spurgeon Jenkins, royal Canadian mounted police, they learned that two to three pairs of woodcocks nest on each of the 18,000 farms on the island. In contrast to New Brunswick and Nova Scotia reports, the woodcock population was believed to be as heavy as in past years.

Studies Forest Type and Game Ranges.--Russell Norris, graduate assistant in forestry at the Pennsylvania Cooperative Wildlife Research Unit, spent April studying the relationship between the forest types and game ranges. This study has already revealed some valuable information, according to Dr. Logan Bennett, unit leader. This spring Mr. Norris found that the



Barrons type is supporting a very high nesting population of woodcock. Incidental to the main part of the study, a method of trapping male woodcock has been perfected for banding purposes, which is the first successful method developed.

Study White-tailed Deer in Alabama.--Carey C. Burnett, temporary assistant at the Alabama Cooperative Wildlife Research Unit, was in charge of field work at Bellamy, Ala., during May. A one-strand electric fence was placed around a field containing cotton, corn, peanuts, peas, and potatoes in an attempt to protect these crops from deer. Later it was observed that the deer were frequently crawling under the wire, although it was only about 24 inches from the ground. It appears that at least two strands of wire will be required for effective control.

A track census was made on 2 miles of CCC road following rain that stopped about 5 a. m. At 10:30 a. m., 38 deer had crossed, and at 5 p.m. the tracks of only 2 more was found. At 7 the next morning, 33 additional ones had crossed, making a total of 73 during a period of approximately 24 hours. Evidently, the deer moved very little during the day and were most active early in the morning, late in the evening, or during the night.

Recommended for Fellowship at University of Missouri.--Final proposals for the use of funds from the Edward K. Love Wildlife Conservation Foundation to stimulate achievements by county organizations, 4-H, FFA, and other high school clubs in the State were completed by the respective special committees, approved by the general committee, and adopted by the board of governors of the foundation.

Graduate student Carl R. Noren, of St. Louis, has been recommended by the Graduate Faculty of the University as one of the two Edward K. Love fellows in wildlife conservation and management for the coming academic year, subject to the approval of the Board of Curators. By the term of his fellowship he is to work on some problem relating to fur bearers, and it is planned to have the raccoon as his special interest.

Inspects Soil Conservation Headquarters.--Dr. W. P. Taylor, leader of the Texas Cooperative Wildlife Research Unit, spent April 17 to 22 inspecting area headquarters of the Soil Conservation Service at Vernon, Wilbarger County; San Angelo, Tom Green County; and Dublin, Erath County.

He was accompanied by P. H. Walsor, State coordinator, the first part of the trip, then by Homer G. Towns, regional biologist, and last by Ben Osborn, assistant regional biologist. Particular attention was paid to wildlife aspects of the various projects visited. The areas<sup>and</sup> conservationists and their associates visited were E. H. Varnell, Vernon, with F. E. Tutt and R. C. Madeley; R. M. Milhollin, San Angelo, with E. J. Hughes; and E. C. Johnson, Dublin, with Messrs. Heiser and Turney.

400 Deer Die in Logan Canyon.--In the vicinity of the Logan Canyon, Utah, feeding ground, where 1,367 deer were counted in January, 398 dead deer, or a loss of 29 percent, were observed in March, according to Dr. D. Irvin Rasmussen, leader of the Utah Cooperative Wildlife Research Unit. The survey of winter losses of deer was more intensive near the vicinities of the various feed grounds and the census area in Logan Canyon because the

approximate total numbers of deer wintering here were known. The dead deer were classified as follows: Female fawns, 40.1 percent; male fawns, 44.0 percent; mature females, 8.6 percent; and mature males, 7.3 percent.

Nearly all the deer in the Logan Canyon area were in a very poor, emaciated condition, and death of many of the animals is attributed directly or indirectly to malnutrition, Dr. Rasmussen said. Of the 398 dead deer found, 24 had been killed by dogs, 10 by coyotes, and 3 had been crippled, probably during the hunting season. Two died as a result of trapping operations, and two were accidental deaths due to fences. Detailed post-mortem examinations were made of 11 deer by Dr. E. R. Quortrup, of the Section of Disease Control, stationed at Bear River Refuge, Brigham, Utah.

Regional Director Plans a Course in Wildlife Management.--Dr. Rasmussen reports that Regional Director Leo L. Laythe, of Region 2, has been anxious to have some educational material in wildlife management prepared for distribution as a correspondence course for the Survey's regional personnel. Several conferences have been held with Mr. Laythe, and a questionnaire was recently mailed to all personnel in Region 2.

The following tabulation is of interest in showing the wants and interests of the group:

Approximately 75 percent of the personnel on the regular payroll responded, indicating a desire to take advantage of the opportunity for some correspondence work. Sixty employees are anxious to obtain college credit, if such is possible; 76 are either not qualified to obtain college credit or are not interested in it. The questionnaire included a list of 13 subjects and blanks for suggestions with a request that preference be listed in order of 1, 2, 3, etc. (Most individuals listed only a limited number of the subjects.) The complete results present a rather large tabulation, although the summary of order of preference is of particular interest:

<u>Subject</u>	Number indicating a subject as:	
	<u>1st choice</u>	<u>a choice</u>
General wildlife management	70	118
Waterfowl management	28	91
Big-game management	11	80
Range management	5	69
Control methods	17	68
Plant identification	5	63
Administrative procedure	12	63
Upland-game management	3	62
Mammalogy	3	54
Ornithology	5	50
Surveying and mapping	4	30
Ichthyology	0	25
Entomology	1	25

Fur animal ecology, disease control, research methods, and other subjects were suggested.

Undoubtedly, writes Dr. Rasmussen, it will be a big job to organize material to suit the group and to make it of such a nature that it could be

understood readily by all personnel, which includes approximately the same number of men with no high school training as those that have completed regular college work and men of all degrees of training between these two extremes. Help has been given by Utah State Agricultural College personnel. They explained methods of presenting this type of instruction, but the material will have to be prepared from the beginning. In the near future, Dr. Rasmussen hopes to prepare at least the beginning of this type of instruction. Pertinent suggestions to aid in this will be welcome.

Study Sage Grouse.--During May, Marshall Gaufin, graduate assistant at the Utah Cooperative Wildlife Research Unit, spent full time in the field on the U. S. Sheep Experiment Station, near Dubois, Idaho, on a study of sage grouse with particular emphasis on the nesting. Mr. Gaufin has had 15 nests under observation, but the large areas and thin grouse population make it difficult to locate the nests. During the period of May 19 to 31, Dr. Rasmussen visited the Dubois area and spent the time in the field with Mr. Gaufin. This still appears to be a very interesting area for a sage grouse study inasmuch as it is one of the very few in the West with a conservative and absolute control of grazing.

Visit Mammal Laboratory.--Newton Wagner, son of Professor George Wagner at the University of Wisconsin, long-time cooperator with the Bureau, called to visit with Dr. Jackson at the mammal laboratory on April 3.

Ray C. Steele, superintendent of the Upper Mississippi Wildlife Refuge, Winona, Minn., conferred with Stanley P. Young on April 5.

Harry Van Clove, treasurer of the Animal Trap Company, Lititz, Pa., visited the laboratory on May 4 to confer with Mr. Young. He was most interested in Mr. Young's research on the history of the New House Steel Trap.

Dr. T. S. Palmer, Washington, D. C., visited the laboratory on May 3. N. H. Kent, retired Biological Survey photographer, Washington, D. C., also was a laboratory visitor on April 25.

Donates Mammal Specimens.--Irving Noblock, San Juanito, Chihuahua, Mexico, presented the Biological Survey with 2 skulls and 8 mammal skins of deer mice, bobcats, wood rats, and a deer fawn.

#### Food Habits Research

Plan Mosquito Control on TVA Area.--A meeting of the technical representatives of various agencies concerned with the correlation of mosquito control with wildlife conservation on the TVA area was held on May 18 at Wilson Dam, Tenn., to specifically outline the work that each agency would undertake this summer. The Bureau was represented by Dr. Cotton and Albert Trowbridge, junior biologist. Mr. Trowbridge will be stationed this summer on the Wheeler Lake Refuge, Decatur, Ala., to make a detailed field study of the problem of coordination of mosquito control with wildlife conservation.

At the TVA meeting, the advisability of the proposed planting program was discussed and agreed upon, and an inspection trip up the river to approximately the end of the wildlife refuge was made by TVA officials and the Bureau representatives to select areas for experimental plantings. Seeds have already been obtained for this work.



"An interesting point was brought out at the meeting," said Dr. Cottam. "It was stated unofficially that in the opinion of many physicians pellagra, a deficiency disease, had decreased in the Tennessee Valley since the impoundment, because more protein in the form of fish is consumed by residents." It was also stated, according to Dr. Cottam, that physicians believe pellagra in Arkansas had increased as the game and fish supply of the State decreased.

Student Collaborators in Washington.--Two student collaborators from the Alabama Cooperative Wildlife Research Unit, Auburn, Ala., recently began work in the Washington food habits laboratory. Lloyd G. Webb arrived early in May to work on stomach analyses of wild turkeys. R. J. Wheeler reported for duty on May 25 and will analyze contents of opossum stomachs until about July 1.

Redwings Increase in California.--During April, Johnson A. Neff reviewed the blackbird situation in Yuba County, Calif., the district where the original control work was carried on in 1931. Since that date losses and populations have been low. This year, however, Mr. Neff reports that the population of tricolored redwings was greater than in any breeding season since 1931. During the month, considerable banding of tricolored redwings and mourning doves was done in the State by Mr. Neff. Information obtained from banding should prove useful in the management and in the control of blackbirds.

Obtains Data on White-winged Dove.--After inspecting the agricultural counties of southern California, Mr. Neff went to Phoenix, Ariz., to obtain further data on the nesting, food, and management of the white-winged dove. On May 15-16 he attended informal conferences with Arizona State Game Warden W. H. Sawtelle and his staff.

Birds Eat Grasshoppers.--From field observations near La Grange, Calif., Mr. Neff learned that large numbers of grasshoppers were emerging on May 5, and that these were being fed upon extensively by tricolored redwings, California jays, Brewer's blackbirds, lark sparrows, linnets, California redwings, yellow-billed magpies, and crows.

Aids in Stomach Analyses.--C. C. Sperry, associate biologist of the Food Habits laboratory, Denver, Colo., spent March 7 to 25 at the Museum of Vertebrate Zoology, Berkeley, Calif., where he supervised stomach examinations being conducted in conjunction with a study of coyote-deer relationships in the Santa Barbara National Forest. The predator-prey study is under the general direction of E. E. Horn, of the Section of Wildlife Surveys.

Study Duck Control on Pea Fields.--During March, E. R. Kalmbach, of the Food Habits laboratory at Denver, conferred with State agricultural officials to obtain an insight into approved methods of handling the field pea crops, which are often injured by ducks. Effort was made to appraise the economic and ornithological aspects of the difficulty that had arisen, and to learn whether a solution to or an alleviation of the trouble is possible through an alteration of cropping methods or by other means short of wholesale duck destruction.

Research Work in Delaware Continued.--Lawrence Saylor spent the greater part of May and June at the Bombay Hook Refuge, Del., engaged in setting up several research areas in the marshes. The purpose of these units is to demonstrate the most practical methods of controlling mosquitoes on refuges and at the same time not disturbing the natural balance of plants and animals on the area, Dr. Cottam explained. CCC Camp Superintendent Ray Knoeshaw and Refuge Manager Herholdt are cooperating in the program and are furnishing enrollees, equipment, and other facilities for the project.

Study Louisiana Grazing Grounds.--During March, J. J. Lynch and Neil Hotchkiss studied the present and proposed work for the Gulf Coast refuges. Observations were made on the feeding of Canada geese on grazing lands of the coast and the relation of fire and grazing to production of goose browse. The food habits of Texas geese differ radically from those of the Louisiana birds, they report. Plans are being made to collect stomach material for the next season.

Maskrat conditions at the Delta refuge were also observed. The relation of burning to goose feeding was studied as well as the vegetative recovery on feeding areas after intensive grazing by geese.

Inspects Gulf Coast Refuges.--Encouraging progress has been made in working out the ecology of Gulf coast marshes, according to Mr. Nelson. Following the meetings of the American Society of Mammalogists in Baton Rouge, he spent April 8 to 15 inspecting the research work being done on the Gulf Coast refuges. He visited the Delta, Lacassine, Sabine, and Aransas areas and reports that present findings will have direct application in determining refuge development policies for the Gulf region. The research work on the Gulf refuges is under the direction of Mr. Lynch.

Prepare Waterchestnut Control Program.--An examination of the waterchestnut beds in Mattawoman and Chicomuxen Creeks, Charles County, Md., was made by F. M. Uhler and C. F. Smith on May 24, preparatory to outlining control measures for this Eurasian aquatic plant. This pest is destroying waterfowl feeding grounds in these areas and has become a serious menace to shallow-water navigation and fishing.

Will Study Bullsake Control.--On April 21, Ralph H. Imler left the Denver laboratory for Crescent Lake, Neb., where he will be stationed during the waterfowl nesting season. He will devote considerable time to experimental work on the control of bullsakes.

Duck Food Disappearing Rapidly.--On marshes near Port Clinton, Ohio, the neighboring waters of Muddy Bay and parts of Sandusky Bay once supported vegetation abundant enough to impede navigation. During the past 50 years, these duck food resources have dwindled almost to the point of extinction. A. C. Martin spent April 18 to 20 studying the duck food problems in these Lake Erie marshes and submitted recommendations on water control and other features of marsh management for this area. During his tour of inspection, he took the opportunity to observe the management work of numerous gun clubs in the vicinity. Many of the organizations, Mr. Martin reports, have built

dikes to save what marsh vegetation remains on their properties. "The heavy action of the waves," he said, "are detrimental to plants and aquatic growth. As the vegetation disappeared, the wave action increased." He added that a study of topographic maps made during the last 50 years reveals that many points and islands have disappeared in this area.

Artificial Nesting Sites Studied.--The construction of artificial nesting sites and pheasant shelters being carried on at the Deer Flat Refuge, Idaho, is proving to be a worthwhile experiment, according to reports from Clarence A. Sooter, stationed at the Malheur Migratory Bird Refuge, Oreg. Data on their utilization are being carefully recorded and will undoubtedly be valuable to other refuges, he says.

Studies Waterfowl-Vegetation Interrelationships.--On May 10, Mr. Hotchkiss returned from a 3-months study of waterfowl-vegetation interrelationships in Louisiana, Oklahoma, and Texas. Most of the time was spent in Cameron and Hidalgo Counties, Tex., where the avifauna includes a number of species found nowhere else in the United States. Rapid agricultural development of this area is making the continued presence of several of these species extremely doubtful, and plans for their preservation are being studied.

Goose Nesting Shifts at Bear River.--In April, Canada geese became common nesters in the inner ponds of Unit 2 of the Bear River Refuge, Utah, C. S. Williams reports. This is due to extensive heavy matting of marsh vegetation by winter snows in the lower marshes, to an increase in number of muskrat houses in the inner ponds, and to variations in water levels, he states. Mr. Williams is continuing goose nesting studies with emphasis on general habitat relationship. His field observations confirm previously indicated correlations between seasonal availability and utilization of various food plants and between the progress of nesting activities and feeding habits.

Personnel.--Effective March 27, Grant Hortin Jensen was appointed junior biologist in the Section of Food Habits. Mr. Jensen was formerly connected with the Cooperative Wildlife Research Unit at Logan, Utah.

Mrs. Gay Faulkner was transferred to this section from the regional office in New Orleans.

Effective May 16, Marcus C. Nelson was given a temporary 30-day appointment as junior biological aide. Mr. Nelson is now assisting Mr. Kalmbach in continuing duck nesting studies at the Bear River Refuge. At the conclusion of his temporary appointment he will return to his former position as part time assistant to Mr. Williams.

#### Distribution and Migration of Birds

Addressos New Jersey Sportsmen.--On March 25, F. C. Lincoln attended a conference and banquet held by the New Jersey State Federation of Sportsmen's Clubs in Trenton, N. J. An afternoon session was devoted to the presentation of papers on wildlife subjects by sportsmen, game administration officials, and naturalists. About 200 members attended the banquet at



which Mr. Lincoln was one of the speakers. In his address he reviewed the history of the plight of migratory waterfowl. He particularly stressed the need to consider this resource as recreation rather than poultry for the table. To this end pointed reference was made to outmoded methods of shooting ducks which could no longer be permitted if the sport were to survive.

Broadcasts on Dove.--Speaking over the Mutual Network on May 21 through the cooperation of the American Wildlife Institute, Mr. Lincoln talked on the history of the mourning dove, comparing it with the extinct passenger pigeon and discussing methods of preserving these birds.

Flyway Biologists Go North.--Harold S. Peters, the Atlantic Flyway biologist, has completed part of his program in the Maritime Provinces. He went to his headquarters in Charleston, S. C., early in June and later will return to the north to join the Canadian Eastern Arctic Patrol under the direction of the Department of Mines & Resources, Ottawa, Ontario. The patrol expects to leave Montreal on July 8 and arrive at Churchill in time to meet the regular weekly train from Winnipeg arriving on August 6. After stopping at Chesterfield the party will go through Hudson Strait, stopping at Lake Harbour before turning northward into Davis Strait and proceeding to the farthest north call at Craig Harbor. After connecting with the Hudson's Bay Company motor schooner in Bellot Strait, the patrol will make a few calls on Baffin Island and return to Halifax during the last week of September. The trip will afford Mr. Peters a very fine opportunity to continue the waterfowl investigations carried on in the same localities during the past few summers, Mr. Lincoln says.

C. E. Gillham, the Mississippi Flyway biologist, is starting on his northward trip to Fort McMurray, Alberta, and to points in the Arctic to continue his waterfowl studies of that region.

Dr. George B. Saunders, the Central Flyway biologist, will again cover the Prairie Provinces.

Luther J. Goldman, the Pacific Flyway biologist, has been in Alaska during May and will continue waterfowl investigations in that area throughout the summer.

Continue Pacific Coast Gull Survey.--Banding work with the gulls of Pacific coast will continue this year, Mr. Lincoln states. Both colored and aluminum bands will be used. About 5,000 California and western gulls will probably be banded this year, he says. Included in this project will be 100 Brewster's egrets that Dr. A. M. Woodbury, of the University of Utah, expects to band.

Purple Finches Swarm to New England.--An unusual abundance of purple finches were seen during April and May in New England, New Jersey, and Pennsylvania, according to reports received from field cooperators. Mr. Lincoln's office was deluged with orders for bands and station to station returns. More than 10,000 of these birds were banded. (See story on page 115.)

Atlantic Coast Gull Survey Continues.--The herring gull survey through the use of colored celluloid bands and regular Biological Survey bands will be continued this year in cooperation with the Linnaean Society of New York. An interesting report on the results of this work from June 1937 through January 1939 has recently been received from Robert P. Allen, secretary of the Gull Survey Committee, according to Mr. Lincoln. More than 950 sight records have been obtained. This represents more than 6 percent of the total number of birds banded. About 10,000 birds will be banded this summer at points along the coast from which further interesting and valuable results can be expected, Mr. Lincoln reported.

Will Band Franklin Gulls on Refuge.--Continuing P. A. DuMont's work with Franklin gulls last summer, Watson Boed, of the Sand Lake Refuge, Columbia, S. Dak., will mark about 7,000 birds with both aluminum and colored celluloid bands. It is hoped that some of these birds will be observed next winter in Peru. William Vogt, now working in Peru for the Guano Administration, will publicize the banding and, as many Franklin gulls winter on the islands under his observation, this Section expects some interesting results.

Interesting Returns from Banded Birds.--The following are returns of outstanding interest from banded birds, showing band number, place and date of banding, and place and date of recovery:

Herring gull:

38-663941, N. H., Isle of Shoals, 7/13/38 Mexico, Moron, Tamaulipas  
2/11/39

Ring-billed gull:

38-679203, S. Dak., Chase Lake, 6/11/38 " Michoacan, 1/8/39

Franklin gull:

37-350766, S. Dak., Columbia, 6/23/38 Peru, Trujillo, 3/13/39

Common tern:

A390108, Mich., Black River, 7/21/31 " Huamez, 3/2/39  
35-317119, Mass., Chatham, 5/23/36 French Guiana, Cayenne,  
1/24/39

36-342977, Mass., Penikese Is., 7/4/36 French Guiana, Cayenne,  
2/21/39

37-337072, Mass., Chatham, 7/1/37 French Guiana, Cayenne,  
2/21/39

Red-faced booby:

38-718637, Oceania, Howland Is., 10/24/38 Tokelau Group, Atafu Is.,  
4/1/39

Gannet:

20725-, Que., Bonaventure Is., 7/31/22 Nfld., Port aux Basques,  
4/14/39

Double-crested cormorant:

A700217, Waubay Lake, S. Dak., 6/13/29 Ill., Bath, 11/6/38

Black duck:

557206, Sask., Davidson, 10/27/28 Neb., Shickley, 12/3/38  
464987, N. Y., Ithaca, 1/11/34 D. C., Nat. Cap. Parks  
Sanctuary, 3/21/39  
(trapped and released)

# THE SURVEY

May-June 1939

## Mallard:

388676, Alta., Lac St. Anne, 8/5/29  
419614 and 419666, Calif., Contra Costa  
Co., 7/13/32

## Blue-winged teal:

56-514307, La., Avery Is., 10/10/36  
36-617639, S. Dak., Columbia, 8/11/37  
37-408990, Kans., Lakin, 8/31/38

## Green-winged teal:

38-517359, Mich., Gormfask, 8/11/38

## Cinnamon teal:

38-512430, Oreg., Burns, 9/27/38

## Pintail:

379625, Kans., Ellinwood, 3/5/27  
600730, Kans., Ellinwood, 3/4/28  
601642, Calif., Lake Merritt, 1/27/28  
A620179, " " " 1/17/29  
A692356 (original 620001), Calif.,  
Lake Merritt, 1/17/29  
38-635310, N. C., New Holland, 2/3/38

## Redhead:

B691793, Minn., Thief Lake, 5/12/54

## Lesser scaup:

A545257, Alta., Lamont, 6/16/38

38-502546, Alta., Lamont, 9/20/38

## Coot:

38-609591, La., Avery Island, 11/27/37

## Mourning dove:

34-410956, Mass., North Eastham, 4/6/38

## Marsh hawk:

38-711501, N. Dak., Portal, 6/26/38

## Chimney swift:

C32705, Pa., Swarthmore, 5/23/30  
39-34177, Mo., Lexington, 9/23/38

39-111991, Ky., Glasgow, 9/22/38

## Starling:

A213620, Ohio, Columbus, 2/16/29

## Cowbird:

38-204222, N. Dak., Kenmare, 7/24/38

## Purple grackle:

A443929, Pa., Norristown, 5/14/32

## Evening grosbeak:

34-239144, Mich., Blaney, 5/16/35

## Purple finch:

138-2424, Mich., Sault Ste. Marie,  
5/22/38  
39-163068, Pa., Ardmore, 3/29/39

Neb., Scottsbluff, 11/25/38

Calif., Gridley, 10/15/38

B.W.I., Port of Spain, 2/?/38

B.W.I., Port of Spain, 12/?/38  
Colombia, Cartagena, 4/17/39

Maine, Saco, 10/3/38

Colombia, Magdalena, 4/8/39

Mexico, Mexico City, 10/5/38

" " " 10/5/38

Calif., Lake Merritt, 11/22/38

" Alvarado, 10/15/38

" Lake Merritt, 11/22/38

D. C., Nat. Cap. Parks Sanc-  
tuary, 1/15/39

N. Y., Seneca Falls, Fall 1938

Mexico, Guamuchil, Sinaloa,  
1/29/39

Mexico, Durango, 1/30/39

Bahamas, Hog Island, 11/18/38

S. C., Chesterfield Co., 11/24/38

Mexico, Guerrero, Chih., 1/23/39

Pa., Swarthmore, 4/26/39

La., Baton Rouge, 9/27/38 (4  
days after banding).

Tenn., Nashville, 9/23/38 (1  
day after banding).

Ohio, Columbus, 3/23/39

Mexico, Jungapeo, Mich., 1/21/39

Pa., Norristown, 5/22/38

N. Y., Potsdam, 3/21/39

Pa., Ardmore, 3/10/39

Mich., Sault Ste. Marie, 5/1/39



## White-crowned sparrow:

36-162480, N. Dak., Fargo, 9/19/37

Tex., Clarendon, 12/17/38

## Rose-breasted grosbeak:

34-253268, Iowa, Pomeroy, 7/19/36

Honduras, Copan, 3/15/39

## Brown thrasher:

461076, N. C., Waynesville, 8/19/26

N. C., Waynesville, 4/24/38

35-209960, N. Dak., Fairmount, 7/18/36

Tex., Winnsboro, 10/31/38

## Robin:

37-238732, S. Dak., Mollotte, 8/2/38

Va., Norfolk, 1/16/39

(band sent in and number checked as correct).

Personnel.--Robert C. McClanahan has been transferred to this Section, effective June 1, from Region 7 where he has been engaged in inspecting mosquito-control work in the southeastern States. As assistant biologist he will be detailed to studies on the distribution and migration of birds.

Fur Resources

Discuss Proposed Canal Through Refuge.--Mr. Ashbrook represented the Bureau at a hearing held by the Corps of Engineers, U. S. Army, in Cambridge, Md., on May 23 to consider a proposal to dredge a canal through the Blackwater Migratory Bird Refuge between Cambridge Creek and Fishing Bay via Little Blackwater River. A brief, prepared in the Bureau, opposing the construction of this canal was read by Mr. Ashbrook. The brief showed why the building of this canal would interfere with the operation of this area as a wildlife refuge. Officials representing the road construction office of Maryland also filed a brief in which they refused to construct any bridges or roads in connection with this canal. A number of private landowners and muskrat-marsh owners also attended the hearing. They were in sympathy with the ideas expressed in the brief of the Biological Survey and strongly opposed the dredging of a canal in this region. A packing company seemed to be the only interest in favor of the canal. The report of the hearing has not been published yet.

Weights Muskrats 1-1/2 Hours Old.--When Dr. Herbert L. Dozier, director, U. S. Fur Animal Field Station, Cambridge, Md., examined a muskrat nest at 9 o'clock one morning he saw only a female. He returned to the nest at 10:30 a. m. the same day and found a new born litter of 4 muskrats, 2 males and 2 females. Three of these weighed 7/8 ounces each, and the larger male weighed 1 ounce. This gives the Bureau the most accurately timed weights and measurements yet obtained on newly born muskrats--within 1-1/2 hours after birth. The litter will be weighed regularly, and a growth curve will be charted, Dr. Dozier said.

Muskrats Breed Late This Year.--Among the thousands of muskrats caught on the Eastern Shore of Maryland that were carefully examined, only a few carried embryos, Dr. Dozier states. This indicates a rather late breeding season this year. Of some 2,500 female muskrats examined, 13 showed evidence of embryos large enough to be observed by the naked eye. Weights were taken on nearly 1,000 black and brown males and females caught on the Eastern Shore.

No appreciable difference is apparent between the black and brown phases in weight, but the males averaged about 3 ounces heavier than the females.

Muskrat Snaring Method.--Catching muskrats by snares or "snoods," a primitive method outlawed in some States, is still practiced by many trappers in the upper part of Dorchester County, Md., and in adjoining Talbot County. This is one of the earliest trapping methods employed and was used extensively before the steel trap was introduced.

Dr. Dozier states that on one area 225 snares and 300 steel traps were used last season. The snare method is used principally in "runs" and seems to be valuable when used with the steel trap. Steel traps, however, have proved more satisfactory on frozen-up and dry marshes where there is little water. A line of snares, it is reported, is distinctly much easier to "run" than regular steel trap lines, as the dead muskrat swinging from the bent pole can be seen from a great distance.

Attends Nutrition Meeting in Canada.--Dr. John K. Loosli, in charge of the metabolism studies of fur animals for the Bureau at Cornell University, Ithaca, N. Y., attended the meeting of the American Institute of Nutrition held in Toronto, Canada, April 26. About one-third of the papers presented at the meeting were on vitamins. Other papers dealt on basal metabolism and the requirements for minerals and other specific nutrients. Many of these papers presented techniques and basic information that will facilitate the studies now contemplated with fur animals.

Continues Mink Studies.--During April and May, Dr. Robert K. Enders, stationed at Swarthmore, Pa., made 2,600 snare and prepared slides as a permanent record in studying the breeding habits of minks. He also has prepared more than 500 tissue slides and performed nearly 100 operations to obtain material for his study. It was on the basis of this very intensive study that Dr. Enders has been able to get definite information to assist mink breeders in their practical breeding problems.

Field Collection of Embryological Material Increases.--Excellent material of genera unrepresented in the collections of reproductive tracts on fur animals were recently received by Dr. Enders. These were sent by F. B. McMurtry, of the Section of Wildlife Surveys, Wichita Mountain Wildlife Refuge, Cache, Okla. William H. Marshall, also of the Section of Wildlife Surveys, at Boise, Idaho, sent in reproductive tracts of martens and fishers collected on the Idaho National Forests. This material is a most important collection for a careful detailed study of the breeding habits of the fur animals as well as their embryological development, Dr. Enders says.

#### Disease Control

Move Animals to Patuxent.--On April 12 and 13, Dr. J. E. Shillinger and Dr. Don R. Coburn visited the Blackwater Refuge, Md., to confer with the refuge staff and to study conditions related to various types of diseases and parasitism affecting the animals on the area. Dr. Shillinger obtained some animals, including a group of muskrats, for removal to the Patuxent Refuge where they will be used for experimental purposes.

Treats Animals for Parasitism.--At the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., young foxes requiring medication for excessive parasitism were treated by Dr. William H. Armstrong on May 27. After leaving Saratoga Springs, he visited the University of Vermont, at Montpelier, to confer with Dr. C. C. Ellis, in charge of the Veterinary Research Laboratory. Before returning to Washington, Dr. Armstrong will also investigate losses among fur animals in the vicinity of Worcester, Mass.

#### FEDERAL AID IN WILDLIFE RESTORATION

Visits Maryland.--Mr. Day conferred with E. Lee Lecompte and other officials of the Maryland Department of Conservation on May 19 relative to proposed Federal Aid projects in that State.

Illinois Rounds Out Duck Studies.--A study on the "Correlation of Food Supplies with Food Uses Among Illinois Game Birds" was approved as a Federal Aid project for the Illinois Conservation Department on May 23. The study will be conducted by Harry G. Anderson, a University of Wisconsin graduate, under the supervision of Dr. T. H. Frison. For the present the work will be confined largely to waterfowl. Later, if conditions warrant, the program may be enlarged to include similar investigations on upland game species.

For many years the Illinois Natural History Survey Division of the State Conservation Department has been studying the waterfowl conditions along the Illinois River bottoms. It has studied the distribution of natural food plants, cover-mapped much of the area involved, and conducted experiments with buffer crops and with the restoration of natural food plants. Before final conclusions can be reached and management measures applied, however, it is necessary that the contents of stomachs obtained in localities that have been observed be analyzed and the results correlated with information already available.

Will Survey Fur Animal Resources.--Returns to the people of Illinois from fur are from 1 to 2 million dollars annually, the Illinois Department of Conservation estimates. To properly administer this valuable resource, the Department feels, dependable information not now available is necessary. To obtain this information, it has proposed a study to be made by its Natural History Survey Division with the assistance of Federal Aid funds. The project was approved on May 23.

The study is designed to determine the distribution of various fur-bearing species, the number of unlicensed trappers in the State, the percentage of fur animals taken by trappers, and the percentage taken by hunters, the details of marketing pelts in and out of the State, the income derived from this resource, and as much as can be learned about fluctuations. Seven counties, well distributed over the State, have been selected for detailed study, which will be supervised by Dr. T. H. Frison, chief, Illinois Natural History Survey Division, Urbana, Ill. Louis G. Brown, University of Illinois graduate, will be the project leader.

First Kansas Project Approved.--As its first project under the Federal Aid program, approved April 28, the Kansas Forestry, Fish and Game Commission is purchasing about 500 acres of lands needed to complete the Finney County



State Game Preserve near Garden City. This preserve is well situated for a demonstration area. A small buffalo herd will be maintained on part of it, and the remainder will be used for upland game birds and waterfowl. The purchase of these additional lands will extend State property to the Arkansas River. The Commission plans to investigate fully the practical possibilities of increasing the wildlife carrying capacity of the area, after which a development program with that end in view will be undertaken.

Kentucky Acquires Restoration Refuge.--The Kentucky Fish and Game Department has recently completed negotiations to acquire, under the provisions of the Federal Aid program, approximately 2,000 acres of land in the eastern part of the State. The unit is comprised largely of cutover timberland, but also includes some grazing and a limited tract of plowable agricultural land. The area will be fenced and administered as a perpetual sanctuary with a resident game manager in charge.

CCC labor will be used in development work, which includes the improvement of food, cover, and water conditions. The primary objective is to increase the populations of deer, wild turkeys, and fur animals on the refuge. Surplus wildlife produced in the sanctuary will be used to restock adjacent lands. The local sportsmen's game protective association actively assisted the Department in acquiring the area and planning its development.

Maine Develops Natural Lakes and Ponds.--Maine has approximately 2,500 lakes and ponds. Most of these bodies of water are now used by waterfowl and fur animals. It is evident, however, that the carrying capacity of many of these waters can be increased by certain developments. A study was initiated last year to determine the potentialities of all of the more-stable lakes and ponds, and the State Division of Inland Fisheries and Game proposes to take advantage of the results of the survey by developing the waters according to the recommendation submitted in the report on the study.

Approved as a Federal Aid project on May 2, the development work for the first year will be confined principally to the establishment of aquatic food and cover plants in waters that are suitable and where the need for such work is evidenced. Later the program may be expanded to include structural developments designed to maintain water levels. Through these planned activities waterfowl, fur animals, moose, and deer will benefit greatly, the Division believes. The University of Maine is cooperating with the Division of Inland Fisheries and Game and the Bureau of Biological Survey.

Mississippi First to Finish Project.--The project submitted by the Mississippi Game Department for work to be done under Federal Aid funds in the Kickapoo Game Preserve in Hinds County was the first one completed in the country. Approved on December 15, 1938, the final claim of the State for the authorized 75 percent of the project costs was submitted on April 7.

This State preserve for deer and turkeys was badly in need of suitable plantings to provide additional supplies of food for wildlife and to check soil erosion caused by heavy usage in the past. The Game Department believes that through this improvement work the wildlife carrying capacity of the preserve will be increased and thereby provide additional surplus deer and turkeys for desired stocking elsewhere in the State.

The seed and planting stock consisted of black locust, sassafras, lespedeza, and kudzu, all of which are most desirable for the purpose intended. While the project work was of necessity confined to a limited area with costs correspondingly low, the Game Department believes the work serves to demonstrate the practical possibilities of using the cooperative wildlife restoration funds to improve cover and food conditions for wildlife and at the same time to aid in needed erosion control. Several other participating States have submitted large-scale projects of like character.

To Develop Seed-Stock Refuges.--The New Jersey Fish and Game Commission recently completed negotiations for leasing 19 seed-stock refuges in Warren County with part of its Federal Aid funds. Pheasants, rabbits, and quails will be primarily benefited, the Commission says. The plan, which was approved on May 2, will first be tried in this county, and if it proves successful and practical, the program will be expanded to other parts of the State.

The improvement of habitat on small, well-distributed tracts of land leased to the State for a minimum of 5 years and the protection of wildlife against predation and hunters are the principles of restoration involved. The Commission feels that surpluses from these areas will aid materially in maintaining a supply on the surrounding acreages and should eliminate to a very considerable degree the necessity of an artificial restocking program. Careful records will be kept to determine the costs and results of such a program under conditions such as exist in Warren County. Areas will be fenced, posted, and necessary plantings made to improve ecological conditions, particularly in regard to wintering facilities.

In an effort to study the effectiveness of these areas, the State will attempt to determine the degree of reproduction in and adjacent to these refuges, the extent of influence of such areas, and in addition will gather data pertinent to the improvement of nesting conditions. Because of the location of the refuges, pheasants and their nesting habits are expected to require the most attention, but information on all forms of wildlife will be tabulated. Such a study, the Commission believes, should yield valuable information on which to base any future program of refuge management in New Jersey.

Paul R. Huether, a graduate of the Game Conservation Institute of Clinton, N. J., will act as project leader. He has experience in New York and Connecticut and has been employed by the New Jersey Fish and Game Department since 1935.

Try New Deer-Control Method.--Deer movements in Atlantic County, N. J., are greatly influenced by agricultural pursuits, with the result that the animals follow definite lines of travel to and from the areas to which they are attracted, according to data gathered by the State Fish and Game Commission. When grazing deer have damaged blueberry fields, truck gardens, orchards, cranberry bogs, and, in some instances, general crops, farmers have suffered financial losses and many have requested that deer be eradicated from the area.

Previous studies indicate that deer food plot installations along the lines of travel offer good possibilities as a method of deer depredation control. The Commission received approval on May 13 to use Federal Aid funds to



establish annual food patches and improve woodlots by thinnings and clearings to create feeding areas away from farms. Twenty units will be established on lands leased to the State, and all developed areas will be designated as refuges, properly posted, and patrolled.

New York Develops Game Management Areas.--The Bureau recently approved plans submitted by the New York State Conservation Department for a cover-management program on game management areas in 16 counties. The development work will be in accordance with New York State's practice of developing areas to provide 40 percent winter shelter, 40 percent spring breeding grounds, and 20 percent summer and fall feeding grounds and service areas. The present project covers approximately 5 percent of the game management areas owned or leased by the State.

The Soil Conservation Service is cooperating with the State Conservation Department by furnishing labor and a large quantity of planting stock, while the CCC is supplying labor to plant the stock.

Farmers, Sportsmen, State Cooperate.--A three-way cooperative game program will be conducted in two New York counties by the State Conservation Department, Bureau of Game, according to an announcement issued on June 1. Landowners, local sportsmen, and the Conservation Department are experimenting with a program built around the principle of providing adequate seed-stock refuges. The State, when assured of the cooperation of the farmers and sportsmen in the community, will lease and post farms and provide required patrol facilities. The sportsmen will cooperate in providing additional protection for the game and the farmers' property, as well as winter food for the game.

The property will be protected by closure to all hunting on certain areas of each farm and on the selected seed-stock areas. Farmers will retain nominal control of all hunting permitted on their property. The plan includes several unusual features and is designed to benefit all farm game species and fur animals as well as to improve hunting conditions in surrounding areas.

More "State Game Lands" for Pennsylvania.--As part of the comprehensive land-acquisition program of the State, the Pennsylvania Game Commission on May 9 received approval for its second land-acquisition project under the State's Federal Aid program. This involves the acquisition of lands in six ownerships, which, when acquired, will function as a single game management unit. All game lands are managed to perpetuate a game crop and to provide hunting opportunities for licensees. Appropriate signs are posted around refuges, through the open hunting areas, and around the boundary lines. Patrol is provided by the Commission's officers and civilians anxious to protect wildlife on these tracts. Grains of various kinds will be sown in 1/4- to 1/2-acre patches or strips, and shrubs, trees, and vines will be planted for food and cover. The wildlife species to be benefited are rabbits, squirrels, deer, wild turkeys, grouse, ring-necked pheasants, and quails.

Begin Work on Demonstration Unit.--The Rhode Island Fish and Game Department, in cooperation with the Rhode Island State College, plans to develop the Burlingame Reservation as a demonstration and research area. The tract will be used to test methods of rehabilitation under practical condi-



tions and, by observation and careful study, to determine the efficiency of game management techniques as they apply to conditions in Rhode Island.

President R. G. Bressler, of Rhode Island State College, appointed an Advisory Board consisting of Dr. Basil E. Gilbert, vice dean and director of research; Dr. Charles J. Fish; Dr. Kenneth E. Wright; and Dr. J. P. Delaplane. Chester T. Whaley will represent the State Game Department. Students of the college will be employed in various phases of the work, which has been set up on a 5-year basis and has the approval of the Governor's Council. The Federated Sportsmen's Club and other interested groups and individuals are contributing funds, material, and labor.

#### LAND ACQUISITION

Hurricane Modifies Refuge Area.--Mr. Dioffenbach recently interviewed the owners of the major portion of the land within the proposed Shinnecock Refuge, Long Island, N. Y., the land and water areas within which have been radically and probably seriously modified by the hurricane last fall. These changes in physical condition will necessitate a new study of the water- and plant-life conditions before negotiations can be continued.

Inspects Georgia Refuges.--Arthur A. Riemer returned to Washington on April 24 from a field inspection trip to the Wilson Refuge and Piedmont Refuge in Georgia, where boundary surveys are under way.

Division Active in Title Quests.--During recent weeks, Mr. Dioffenbach reports, there has been more than the usual activity in the Division in assembling the necessary material for the filing of declarations of taking on lands being acquired by the Soil Conservation Service within many refuges. Those familiar with the history of the refuge program started in 1933 will recall that the land program of the Federal Emergency Relief Administration allotted approximately 5-1/2 million dollars for land acquisitions, principally in the Great Plain States. This Division made the appraisals, conducted negotiations, and took purchase contracts for the land. These contracts were then turned over to the FERA, later the Resettlement Administration, for the legal work requisite to the conveyance of title to the United States. Much of the curative work and other field activities attaching to the consummation of the deals still rest in this Division.

Many cases were so defective as to title that condemnation was necessary. This Division prepared testimony and had expert witnesses available in such suits. Numerous complications attaching to condemnation were injected in many proceedings so that all have not yet been completed. As the money for such acquisitions will not be available after June 30, declarations of taking, which involve the depositing of the appraised value of the lands in the courts, must be made. Thus, at least title to all these difficult cases will be vested in the United States, but there must later follow the usual proceedings in condemnation for the purpose of determining the rightful owners, the court awards, and distribution of the money.

Included in this group will be considerable land in the Lake Isom Refuge, Tenn., and the Red Rock Lake Refuge, Mont. Other tracts are on many other refuges.

Federal Aid Keeps Them Busy.--The personnel of the Section of Examinations and Appraisals has been unusually busy during the spring months on the examination of projects being acquired under the Federal Aid act, in addition to an acceleration of examination work on projects being considered under the Migratory Bird Conservation Act.

Check examinations and conferences with the United States District Attorneys in charge incident to court proceedings for the condemnation of lands being acquired under the Migratory Bird Conservation Act have been some of the most active functions of the Section of Examination and Appraisals during recent weeks in preparation for trials shortly to be held.

Establishes 22 Refuges.--Twenty sanctuaries were assigned to the Bureau when President Roosevelt on May 10 signed Executive orders establishing the following migratory waterfowl refuges in North Dakota: Appert Lake, Billings Lake, Bone Hill Creek, Buffalo Lake, Camp Lake, Canfield Lake, Charles Lake, Dakota Lake, Flickertail, Florence Lake, Half-Way, Hutchinson Lake, Johnson Lake, Lake Moraine, Lake Oliver, Little Goose, Little Lake, Lords Lake, Lost Lake, and Minnowastena.

Two other refuges had been established on April 11 and May 2, the first in Vermont (Morgan Farm Wildlife Refuge) and the second in Washington (Little Pond Oreille Wildlife Refuge).

Personnel.--William A. Schmidt, junior cadastral engineer, has returned to the Washington office after a 30-day detail to the Wilson Refuge, Ga., where he surveyed the boundary lines of the property donated to the United States by Dr. F. C. Wilson, of Savannah.

Elmon Radway is now on an extended field trip through the Northeastern States. He will do examination work on refuges being acquired under the Migratory Bird Conservation Act and the Federal Aid act and will inspect lands that may be acquired in the Missisquoi and Mooschoorn Refuges.

George L. Dueret, assistant engineering aide, returned to the Washington office after a 60-day detail to the Piedmont Refuge, Ga., where he assisted in boundary surveys.

John Walter Reser, junior engineering draftsman, who has been employed in the Section of Surveys and Maps since August 1936, transferred on May 1 to the Bureau of Agricultural Economics.

#### WILDLIFE REFUGES

Bufflehead Travels 35 Miles an Hour.--A female bufflehead duck was seen flying at a sustained rate of 35 miles an hour, according to Peter J. Van Huizen, refuge manager of the Sacramento Migratory Waterfowl Refuge, Calif. He recently checked the speed of the bird, which flew along a canal beside the road on which he was traveling.

Salton Sea Popular Tern Nesting Refuge.--A flock of approximately 2,000 northern phalaropes was noted by Refuge Manager Luther C. Goldman on May 12 on the Salton Sea Migratory Waterfowl Refuge, Calif. With these birds were about 40 Wilson's phalaropes and about 300 semipalmated plovers. Mr. Goldman reported 104 nests of gull-billed terns in one colony, and another



with fewer nests. Seventeen Caspian tern nests were located in the middle of the gull-billed tern nesting colony.

Estimate Waterfowl on Tule Lake.--On January 16, 17, and 18, when the annual waterfowl inventory was taken, there were some 20,500 ducks, 3,200 geese, and 350 whistling swans, or an estimated total of 24,000 waterfowl, on the Tule Lake Migratory Waterfowl Refuge, Calif. This is more than twice the estimated population for the corresponding period in 1938. During the same period, 16,600 waterfowl were estimated to be on the Upper Klamath Refuge, Oreg.

Virginia Rail Found on Tule Lake.--Refuge personnel of the Tule Lake Migratory Waterfowl Refuge, Calif., report finding a Virginia rail dead in one of the muskrat traps. This is believed to be the first record of a Virginia rail occurring on the area since the refuge was established.

New Bird Records Established on Bombay Hook.--Three new bird records have recently been established for the Bombay Hook Migratory Waterfowl Refuge, Del. A ring-necked duck was seen on a rain pool in a rye field on the refuge this spring, and an American goldeneye remained there from December 9 to March 6. On April 13 a black vulture was definitely identified on the area, one of the few records of this bird's ever occurring in the State.

Fishing Licenses Sold at Okefenokee.--During the 1938 calendar year, 978 State fishing licenses were sold at the Okefenokee Wildlife Refuge, Ga., to persons fishing in the swamp. This does not represent the total number of persons fishing on the refuge but only those who came to the swamp without a State license.

New Birds Recorded on Camas Refuge.--Howard J. Sargeant, refuge manager, reports that he has definitely identified four black-necked stilts and two pied-billed grebes on the Camas Migratory Waterfowl Refuge, Idaho, this spring. This is the first time either of these species has been seen on the area since its establishment as a refuge.

Wood Ducks Use Artificial Houses.--Wood ducks are using 1 out of every 5 of the 375 wood duck houses built by the Illinois State Natural History Survey and placed at various points on the Chautauqua Migratory Waterfowl Refuge, Ill., during the past winter, Refuge Manager Philip Nelson reports.

American Egrets Noted Along Mississippi River.--This spring 15 American egrets were seen near the Mississippi River in Allamakee County, Iowa. On May 10 Rangers Edward A. Davis and Joseph G. Teff observed these birds within the Upper Mississippi Wildlife Refuge. Numerous observations of egrets have been made along the river in late summer and fall but occurrences in the spring have been rare.

Captive Geese Nesting on Seney Refuge.--Refuge Manager C. S. Johnson advises that 252 pinioned and 14 full-winged Canada geese were in the goose pen on the Seney Migratory Waterfowl Refuge, Mich., during the latter part of



April, and 10 pinioned and 42 full-winged birds were at headquarters. Pinioned birds in the pen started nesting on April 21, when three nests were found. By May 1, 30 nests with an average clutch of 4 eggs were under observation.

First Time Birds Visit Areas.--Several species of birds were seen this spring on the Nino-Pipe, Pablo, and Pishkun Refuges, Mont., for the first time since the establishment of the areas, Refuge Manager George L. Girard reports. Holboell's and pied-billed grebes and ring-necked ducks occurred on the Nino-Pipe and Pablo areas, white-fronted geese on the Nino-Pipe, and wood ducks on the Pishkun Refuge.

Good Spring Run-off at Lake Bowdoin.--Spring run-off in the Milk River Valley of Montana, where the Lake Bowdoin Migratory Waterfowl Refuge is located, this year exceeded that of all previous years since 1914, according to records kept for the area by the Bureau of Reclamation. Refuge Manager Benjamin M. Hazeltine reports that while the refuge was in excellent condition to receive the spring migration of birds, the greatly increased water area made it difficult to compare this spring's migration with that of previous years. He adds, however, that undoubtedly nesting is considerably increased this year.

American Egret Seen on Crescent Lake.--Refuge personnel definitely identified an American egret on the Crescent Lake Migratory Waterfowl Refuge, Nebr., this spring. This is the first time in the history of the refuge that this bird has been recorded on the area.

Fewer Birds Fly Over Valentine.--Although the spring waterfowl flight this year through the Valentine Migratory Waterfowl Refuge, Nebr., was considerably reduced over last year's (this year's high was 20,000; last year's, 100,000), the flight of canvasbacks, redheads, and gadwalls was greater than in any previous year. Previously pintails made up 75 percent of the spring flight, but this year they comprised only about 20 percent of the total. Refuge personnel believe that the scarcity of birds on the area this year is due to the fact that the lakes remained frozen over until late in March and that, as a result, the main flight either passed by without stopping or used another flight lane. Canada geese were more numerous than in previous years.

Antelope Have Good Winter.--The antelope on the Charles Sheldon Refuge, Nev., returned to their summer range in fine condition, Superintendent E. R. Sans reports. He estimates that more than 5,000 animals are in the herd. Mule deer, too, wintered well, and no losses were noted. Because of the unusual precipitation last year, forage and browse made a fine growth and provided ample food for all wildlife during the winter.

Mattamuskeet Lodge Popular with Public.--The lodge on the Mattamuskeet Migratory Waterfowl Refuge, N. C., is being widely used by the public, Refuge Manager Maynard S. Johnson advises. On April 10 a ball held in honor of the Governor was attended by a capacity crowd of 250 persons. On April 7, juniors and seniors of the Englehard High School held a banquet at the lodge, and the previous week a group of social workers held a meeting there.

New Bird Records for Pea Island Refuge.--The glossy ibis and European wigeon are birds recorded on the Pea Island Migratory Waterfowl Refuge, N. C., this spring for the first time since the establishment of the refuge, according to reports received in Washington.

NYA Camp Established at Arrowwood.--An NYA farm camp was established on the Arrowwood Migratory Waterfowl Refuge, N. Dak., on April 10. Under present arrangements the NYA is employing about 20 young men who are devoting half their time to work projects on the refuge and the other half to farming activities and farm educational projects. The men farm approximately 400 acres of the refuge on a share-crop basis, graze five head of stock each month, and keep some poultry to help defray expenses. The group is supervised by a project leader from the State Agricultural College, supplied by the NYA, and by the refuge personnel. During the short time the camp has been in operation, the men's duties have included planting trees and grain crops, clean-up work around the headquarters, repairing farm equipment and truck trails and dams, and office work.

Canadian Officials Visit Lower Souris.--B. W. Cartwright, chief naturalist of Ducks Unlimited (Canada), and J. Dewey Soper, chief Federal Migratory Bird Officer for the Prairie Provinces, with their families, recently spent a day on the Lower Souris Refuge, N. Dak. In a letter to Dr. Gabrielson, they stated that the refuge is in an excellent condition and that they learned many things during their tour over the area that will be of great help to them in their work in Canada. They expressed themselves as being surprised at the number of waterfowl present on the refuge and stated that if the Biological Survey has anything like the same number on other refuges there can be no doubt but that the refuge program will have a tremendous effect on the waterfowl population of the Continent.

Lower Souris Water Supply Increases.--For the first time since its establishment the Lower Souris Refuge has plenty of water, Refuge Manager C. J. Henry reports.

Goose Set New High for Refuge.--At least 15,000 geese, mostly blue and snow but also a few Hutchins's, Canada, and white-fronted, stopped on the Lower Souris Refuge during this spring migration, Mr. Henry advises. This is a decided increase over the number present in other years, the highest previous count being 2,000 in 1938.

Fishing Season Opens at Wichita.--About 8,000 persons attended the opening of the fishing season on the Wichita Mountains Wildlife Refuge, Okla., this year, Superintendent George E. Mushbach says. Many excellent strings of fish were caught, especially in Lost and French Lakes, where the fishermen concentrated in largest numbers.

White Pelican Winters on Cape Romain.--Refuge personnel report that a white pelican wintered on the Cape Romain Migratory Bird Refuge, S. C. This is the fourth time this species has been recorded in the State. It was first noted on December 28, 1938, and remained until April. The first authentic

record of a white pelican in South Carolina was made on October 26, 1910. On May 12, 1929, the species was seen near the Savannah River, and on June 13, 1934, a flock of 10 were recorded.

More Migratory Birds on Refuges.--A decided increase in the number of swans and redhead and bufflehead ducks during the spring migration was noted on the Maubay Migratory Waterfowl Refuge, S. Dak. All other birds occurred in about the same numbers as in previous years, Refuge Manager Watson E. Boed reports. Refuge Manager Gilbert E. Wardwell, of the Crescent Lake Migratory Waterfowl Refuge, Nebr., also reports large increases in sandhill cranes and pelicans and slight increases in canvasback, redhead, and ruddy ducks and Canada geese.

Coatimundi Seen on Aransas.--Mr. Salyer, while on a western field-inspection trip, advised that he and James O. Stevenson, refuge manager, definitely identified a coatimundi on the Aransas Migratory Waterfowl Refuge, Tex. He also reports that while near Brownsville, Tex., he noticed fresh beaver work and was informed by local people that several beavers have recently been seen in that vicinity.

Elk Return to Summer Range.--The elk herd at Jackson Hole, Wyo., left the refuge the middle of May and returned to the summer range, Refuge Manager Almer P. Nelson writes.

Personnel Notes.--Miss Margaret M. Campbell was appointed junior clerk-stenographer in the Division effective May 12.

Miss Imogene Edwards, formerly with the Veteran's Administration, was appointed junior clerk-stenographer in the Division effective April 17.

Miss Josephine DeCastro, assistant clerk-stenographer, on May 22 became Mrs. Morton L. Raysor.

H. Douglas Gray, formerly with the Alaska Game Commission, was appointed associate refuge manager in charge of the Aleutian Islands Wildlife Refuge, Alaska, on May 1.

Malcolm N. Allison, formerly employed by the Division of Predatory Animal and Rodent Control, was appointed associate refuge manager in charge of the Kofa and Cabeza Prieta Game Ranges, Ariz., on April 1.

Donald Ambrosen, junior refuge manager, formerly on the Upper Mississippi Wildlife Refuge, was transferred on May 1 to the Maubay Migratory Waterfowl Refuge, S. Dak., to replace Watson E. Boed, who was transferred to the Sand Lake Migratory Waterfowl Refuge, S. Dak., as assistant refuge manager. Philip A. DuMont, former manager of the Sand Lake Refuge, was transferred to the Washington office on May 1 as administrative assistant in Mr. Salyer's office.

William T. Krummes, formerly associate refuge manager in the Albuquerque regional office, was transferred to the Washington office on May 16 as administrative assistant in the Section of Operations.

Jack E. Perkins, formerly at the Delta Migratory Waterfowl Refuge, La., was transferred on May 10 to the Sabine Migratory Waterfowl Refuge, La., as junior biologist.

Arthur D. Scott was appointed mechanic on the Malheur Migratory Bird Refuge, Oreg., effective April 1.



The following laborer-patrolmen have recently been appointed: Henry E. Cherry, Boulder Canyon Wildlife Refuge, Ariz. and Nev., effective May 1; Frank Stocks, Desert Game Range, Nev., effective May 1; Arnold Bye, Lower Souris Migratory Waterfowl Refuge, N. Dak., effective March 27; Ernest F. Holland, South Carolina Sandhills Wildlife Refuge, effective April 2; and Samuel R. Fletcher, Little Pond Orcillo Wildlife Refuge, Wash., effective May 1.

### CONSTRUCTION AND CCC OPERATIONS

Inspect Camps in Region 7.--H. W. Torhuno and Millard I. Frost, accompanied by L. C. Stockdale, of the Office of CCC Activities of the Department, spent April 17 to 30 inspecting all camps in Region 7. The party met Regional Director Silver at the Okafonokoo Refuge, Ga., and a trip was made over that area.

Mooschorn Refuge to Have CCC Camp.--A cadre of 21 boys under the direction of an army construction officer left Boston for Calais, Maine, on April 24 to construct new camp buildings on the Mooschorn Migratory Waterfowl Refuge. These buildings will probably be occupied in July by a full CCC company, which will carry out an extensive work program on the Mooschorn area. The buildings will be so situated that operations can be conducted on the Edmunds unit of the area as well as on the Mooschorn Refuge proper. The work program will consist primarily of trail building; fencing; clearing; landscaping recently completed headquarters group; construction of fire lines, telephone lines, and small dams; and erection of approximately six lookout towers.

Director Visits Back Bay Camp.--P. S. Munk Pederson spent April 15 and 16 at Back Bay Camp BF-1, Va., inspecting the camp and work projects. Director Robert Fockner, of the Civilian Conservation Corps, visited the camp on April 16 with members of the Isaac Walton League of Norfolk. The group, accompanied by Mr. Pederson and Camp Superintendent C. A. J. English, made an extended inspection of the area. The visitors were particularly interested in the development work on the Long Island section of the refuge, which principally consists of clearing food areas. A large gathering of fine-looking geese on the island at the time of the visit was greatly admired by the visitors, Mr. Pederson reports.

Personnel Changes.--O. W. Teckmeyer, former CCC inspector in Regions 6 and 8, has been transferred to the Washington office to head the Section of Materials and Equipment Purchase, Equipment Operation, Safety and Education. R. O. Gustafson, former chief of that section, is now with the Section of Structures, Division of Wildlife Refuges. As associate equipment engineer, Walter E. Vroman, who has been camp superintendent at Montezuma BF-1, N. Y., since the camp was established, has replaced Mr. Teckmeyer as CCC inspector in Regions 6 and 8 with headquarters in the Boston regional office.

## GAME MANAGEMENT

Address Izaak Walton League.--On May 4, Mr. Crouch was guest speaker at a dinner of the New York County Chapter of the Izaak Walton League held at Rossoff's in New York City. According to reports, his talk on game-law enforcement was enthusiastically received, and those in attendance pledged their full support to the Bureau's program.

Clean up Eastern Shore Area.--Fifty-one duck bootleggers, trappers, and buyers were convicted in Federal courts in Norfolk, Va., Baltimore, Md., and Wilmington, Del., during May, and 10 more await trial in the Baltimore court as the Bureau concluded a concentrated drive against violators on the Eastern Shore of Maryland and Virginia.

Survey game agents spent a year in this region investigating the activities of trappers and bootleggers who had been the source of supply for the illicit traffic in migratory birds sold in certain restaurants and night clubs in Norfolk, Richmond, Washington, Baltimore, Philadelphia, New York, and Boston. State game officials cooperated with Federal agents in apprehending the violators.

Much of the investigation was conducted by undercover operators. Fines in all cases totaled \$3,270 and ranged from \$10 to \$300 and costs each. Jail sentences were meted to 11 persons, the shortest term being 30 days, the longest 120.

Fined for Possessing Wood Duck.--Pleading guilty in State court at Texarkana, Ark., on May 15 to illegal possession of a wood duck, a resident of Texarkana was fined \$100 and costs of \$12.50. The evidence was obtained by a Federal agent in cooperation with a State deputy game warden and a city policeman.

Transported Elk to California.--A resident of California, who in December 1938 transported six elk to that State which were illegally taken in Montana, was fined \$250 when arraigned in Federal court at Los Angeles during the May term.

Dove Baiters Pay \$190.--Eight persons charged with hunting mourning doves by aid of feed appeared in Federal court at Macon, Ga., on May 1 and entered pleas of guilty. Four of the hunters were fined \$10 each, and two \$25 each. The remaining two, who had also killed doves in excess of the daily limit, paid fines of \$50 each.

Agent Findings Lead to Arrest.--As a result of investigations made by an agent of the Biological Survey in Texas, a resident of Des Moines, Iowa, was apprehended for illegal possession of quails by officers of the Iowa State Conservation Commission. The defendant appeared in State court at Des Moines this month, pleaded guilty, and was fined \$120.

Hunted on Refuge.--Two hunters found by State and Federal officers on the Kentucky Woodlands Wildlife Refuge, Trigg County, on April 27 were prosecuted in State Court at Cadiz, Ky., on May 4. One defendant was adjudged guilty by a jury and assessed a fine and costs totalling \$46.50. The other hunter entered a plea of guilty and was fined \$39.50.

Robin Killers Fined.--A group of seven persons who killed many robins in Rapides Parish, La., on January 27, were arraigned in the Federal court for the Western District of Louisiana. All entered pleas of guilty, one being fined \$50 and the others \$25 each.

Gets Jail Sentence.--A trapper found on the Lake Mattamuskeet Wildlife Refuge, N. C., was sentenced to 60 days in jail on April 3 by the Federal court for the Eastern District of North Carolina. He had previously been before the same court for a similar offense.

Killed Upland Plovers.--A resident of Dallas County, Tex., was apprehended by an agent of the Biological Survey and State Game Wardens on April 22 while killing upland plovers. The defendant was fined \$100 and costs of \$11 in State court on May 23.

Dakota Courts Convict Violators.--Game law violation cases obtained by Federal agents and State game officers were disposed of in State courts during April as follows: In North Dakota, killing a swan, 1 (\$50); killing a goose in close season, 1 (\$25); and hunting geese in close season, 1 (\$25). In South Dakota, killing geese in close season, 4 (\$50 each); hunting geese in close season, 1 (\$25); and possessing a goose in close season, 1 (\$25). Costs were assessed in each case and totaled \$63.25.

Hunted Mourning Doves.--For hunting and killing mourning doves a resident of Bell County, Tex., was apprehended by an agent of the Biological Survey and a State game warden on April 23. He was fined \$40 and costs of \$12.50 in State court on May 10.

Transported Elk, Pay \$111 Each.--Pleading guilty in Texas State court to possessing an elk illegally transported from Colorado, three residents of Borger, Tex., were fined \$111 each on May 15. The evidence was obtained by Federal agents and State game wardens.

Had 60 Doves.--Last September, a game management agent caught a resident of Dallas, Tex., with 60 mourning doves. On May 27, the man pled guilty in State court at Dallas, was fined \$100 and costs of \$11.

#### Alaska Game Law Administration

White Buffalo Calf in Alaska Herd.--An albino buffalo calf was seen by Wildlife Agent Grenold Collins, of the Alaska Game Commission, during a recent flight over the area along the Big Delta River occupied by a buffalo herd. Mr. Collins and his pilot saw about 115 adult buffaloes and 17 calves, including the albino, in this group. Glimpses of other buffaloes in the dense timber could be had at intervals, so it is believed that there were at



least 50 more which they did not count. Mr. Collins said the albino calf was pure white except for a brownish tinge on the top of its head near its ears. As he was unable to approach near enough to the herd to see the color of its eyes, it was impossible for him to determine whether or not the calf was a true albino.

This is the third albino calf born in herds under the protection of the Biological Survey, two others having been born in the herd at the National Bison Range, Mont., from which point the nucleus of 23 animals for the Big Delta herd was transferred in 1928.

#### PREDATOR AND RODENT CONTROL

Pine Mice Damage Peach Trees.--The first definitely reported instance of pine mice damaging a peach orchard was recently reported in Rising Sun, Del., by Ernest M. Mills, according to District Agent Geo. B. Lay, of the New England area. Mr. Mills, who is conducting rodent-control work in New Jersey and Delaware, made a preliminary examination of many of the peach trees and found 50 or more completely girdled.

Coyote Pups at Large in Maine.--According to Maine Conservation Department officials two or three coyote pups are still at large near Orono. Mr. Lay states that this fact has been confirmed by Clarence Aldous, of the Section of Wildlife Surveys. A trapper employed by the conservation department has already taken 13 coyotes and half-breeds. The trapper will probably be reemployed to capture the remaining few predators.

Prairie Dog Town in Massachusetts.--A prairie dog town is located near Lakeville, Mass., according to Mr. Lay. The town, populated by 1,200 to 1,500 dogs, is on a farm owned by P. R. Jones, who started the colony in 1935 with 18 females and a few males brought from Texas.

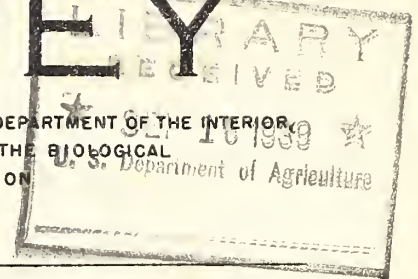
Rats Take Record Toll of Chicks.--In one night 600 baby chicks were taken by rats on the Sacks Poultry Farm, Leichestor, Mass., Mr. Lay reports. Walter W. Dykstra, working under Mr. Lay's supervision in the State of Massachusetts, investigated this case. He learned that the owner had purchased the chicks the day before they were killed. The loss totaled \$114.

Plague Infects Kangaroo Rats.--According to a report of the Public Health Service issued May 19, plague infection was proved in tissue from a kangaroo rat trapped on April 15 some 10 miles west of Las Cruces, Dona Ana County, N. Mex. The report states that this focus of infection is believed to be farther south and east than any other area in which plague in wild rodents has been demonstrated to exist in the United States. This is the first proof of plague among kangaroo rats in this country, the report states.



# THE SURVEY

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## GENERAL NOTES

Inspects Refuges.--After inspecting the Bombay Hook area in New Jersey on June 2, Dr. Gabrielson left Washington 2 days later to attend the meeting of the International Association of Game, Fish and Conservation Commissioners, which was held in San Francisco from June 26 to July 1. En route he visited the Upper Mississippi Refuge and various points in North Dakota, Colorado, Utah, Nevada, California, Oregon, and Washington, returning to Washington, D. C., on July 7. On June 11, at Kenmare, N. Dak., he addressed a meeting of the North Dakota chapter of the National Wildlife Federation. He also addressed a session of the A. O. U., which held its annual meeting in Berkeley, Calif., June 19 to 22.

Broadcast on Western Network.--The Western Farm and Home Program for June 21 included a discussion of "Western Wildlife Refuges" by Dr. Gabrielson and one on "Waterfowl in the Pacific Flyway" by F. C. Lincoln. One week later, Albert M. Day broadcast over the same network, speaking on "Federal State Aid to Wildlife".

Named Regional Director.--Effective June 28, John C. Gatlin was designated Regional Director of Region 3 to succeed Donald A. Gilchrist, who retired because of physical disability. The announcement was made in the form of a memorandum signed by Dr. Gabrielson.

## ADMINISTRATION

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (AFO) series since the last issue (May) of the Survey:

- No. 94. Amendment No. 5. Leave regulations. (June 30.)
- No. 105. Amendment No. 1. Certification required on vouchers covering long distance telephone tolls. (June 19.)
- No. 118. Amendment No. 2. Government tax exemption certificates-- use of in connection with the California State Sales Tax. (June 10.)
- No. 184. Revised. Payment for commodities or services, the quantity of which is determined by metered readings, and payment for telephone services. (June 7.)



- No. 265. Certification as to "Citizenship" of employees to be shown on certain pay rolls. (June 6.)
- No. 266. Accident hazards. (May 20.)
- No. 267. Contract symbols and numbers. (June 29.)
- No. 268. New provisions of law applying to mail sent under frank; quarterly reports on weight of mail matter transmitted. (June 28.)
- No. 269. Revised index to AFO memoranda. (June 29.)
- No. 270. Restrictions on transportation and travel allowances. (July 8.)
- No. 271. Submission of original papers pertinent to claims, accidents, misconduct, and irregularities involving Bureau personnel. (July 14.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 32. Supplement No. 13. Contract for service-station deliveries of gasoline and lubricating oil in the State of Kentucky, for the period ending June 30, 1939. (June 3.)
- No. 81. Amendment No. 2. Procurement of fire extinguishers. (June 12.)

The following memoranda to field officers have been issued in the new "Boat Maintenance Memoranda" series:

- No. 3. Amendment No. 1. Care and cleaning of gasoline tanks in motorboats. (June 3.)
- No. 5. Pilot rules and buoyage system of the United States. (July 6.)
- No. 6. Fire extinguishers. (July 6.)

Personnel.---James L. Talbert, in charge of the Section of Purchase and Property, was transferred before the close of the last fiscal year to the Office of Budget and Finance, Department of Agriculture. He has been succeeded by John J. Quinn, formerly assistant head of the section.

Carey G. Cruikshank, in charge of the Section of Accounting, has been transferred to the newly established Section of Service and Training. The functions of the new section will be outlined in a forthcoming "AFO" memorandum. Wesley E. Corbin, formerly assistant head, has been designated as head of the Section of Accounting.

## PUBLIC RELATIONS

Bureau Series of Publications.--Biological Survey publications in the Department of the Interior will, with one exception, consist of Bureau series, instead of contributions to Departmental series, under an authorization dated July 26 by Acting Secretary Burlew, approving Dr. Gabrielson's recommendation on the subject. The one exception is that the Survey will be a contributor to the Departmental series of Conservation Bulletins, which are being planned to be handled in this Department as are Farmers' Bulletins in the Department of Agriculture, thus enabling the Survey to continue its functions in disseminating practical information in this manner.

The series used by the Biological Survey prior to July 1 will be reduced from 13 to 7, as follows: (1) North American Faunas; (2) Research Bulletins (superseding contributions to Agricultural Technical Bulletins); (3) Conservation Bulletins (superseding the Farmers' Bulletins, Leaflets, and popular Yearbook articles, so far as the Biological Survey contributions are concerned); (4) Wildlife Circulars (superseding for the Survey the Agricultural Circulars, Service and Regulatory Announcements, Miscellaneous Publications, Agricultural Statistics, and the Journal of Agricultural Research); (5) Annual Reports; (6) Posters; and (7) Alaska Game Commission Circulars. The three new series will begin with No. 1, but the current serial numbers of the North American Faunas, Posters, and Alaska Circulars will be continued. The processed serials of the Bureau also will be continued without change of name, except that of the Wildlife Research and Management Leaflets (BS-Leaflets), which will be shortened to "Wildlife Leaflets." Arrangements for the Conservation Bulletin series have proceeded to the extent that approvals have been given by the Secretary, the Bureau of the Budget, and the President. The matter was sent by the President to Congress on July 15 (House Document No. 421), and authorization was included in the Deficiency Bill, which passed just before adjournment.

Issuing the new series is a reversion to the method of publication that was in force from the time the Biological Survey (under its earlier designations) was established until 1913, when most of the individual Bureau series of Bulletins and Circulars were abolished and all units became contributors to Departmental series. The North American Fauna was one of the surviving exceptions. The new series of Research Bulletins is a successor to three series--Biological Survey Bulletins (1885-1913); Department Bulletins (1913-27); and Technical Bulletins (1927-39). The last issue in this series under the Department of Agriculture (No. 711), like Bulletin No. 1, which was issued 50 years ago, will be an economic report on the English sparrow.

"What Price America?" Broadcast Features Wildlife.--On July 29 the history of wildlife in the United States was dramatized in a half-hour broadcast in the "What Price America?" series sponsored by the Department of the Interior in cooperation with the Columbia Broadcasting System. The broadcast, concluding with a dramatization of the history and work of the Biological Survey, was prepared under the direction of Shannon Allen, in the Radio Section of the Department's Division of Information, by Lou Hazam on the basis of research by Hugh Russell Fraser and with cooperation by Mr. Zahniser. The "What Price America?" broadcasts, which are produced by the Columbia Broadcasting System, may be heard each Saturday at 12.30 p. m. Eastern Standard Time, on the CBS stations, coast to coast.

Broadcasts.--Biological Survey weekly participation in the Department of Agriculture's regular time on the National Farm and Home Hour ended on June 30 when Howard Zahniser discussed "The Second Big-Game Inventory." Efforts are being made to obtain cooperation of the National Broadcasting Company in continuing regular Biological Survey broadcasts during the Farm and Home Hour, but no definite arrangements to this end have yet been made. On June 22 Mr. Zahniser discussed results of research work of the ten cooperative units at land-grant colleges.

Transferred from Food Habits.--Franklin H. May, junior biologist in the Section of Food Habits, was transferred effective June 30, to the Editorial Section, where he will assist in the preparation of manuscripts for publication. By educational background, teaching and library experience, and scientific training Mr. May is well qualified for his new line of work. After receiving a B. S. in geology from Syracuse University in 1921, he did one year of graduate work in zoology and then was engaged in teaching zoology, other sciences, and languages in high schools from 1922 to 1931. Having passed the junior biologist examination, he was appointed in 1931 to the Biological Survey in the Food Habits Laboratory at Denver, Colo., where he served for the 4 years prior to his assignment in 1935 to the Washington, D. C., laboratories of the Section of Food Habits.

Typist Appointed.--Mrs. Sylvia P. Kershner, formerly of the Division of Federal Aid, and more recently detailed to the Property Section of the Division of Administration, was transferred to the Editorial Section on July 19, where she will be engaged in typing edited official manuscripts that are to go to the printer and in the maintenance of mailing lists.



Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Directory of field activities of the Bureau of Biological Survey, 1939. Miscellaneous Publication No. 343, 117 pp. June 1939. Received June 21.
- Regulations relating to game, land fur animals, and birds in Alaska, 1939-40. Alaska Game Commission Circular No. 17, 34 pp. June 1939. Received June 20.
- Hunters--Attention! Buy a stamp before you shoot. Poster No. 62 (Bi), 1 p. July 1, 1939. Received June 24.
- Fall and winter food habits of deer in northeastern Minnesota. By Shaler E. Aldous, Section of Wildlife Surveys, and Clarence F. Smith, Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-137, 13 pp. May 1939. Received June 15.
- Sperm studies as a guide in fur-animal breeding practice. By Robert K. Enders, Biologist, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-138, 3 pp. June 1939. Received June 30.
- Rabbit-pen construction in relation to sore hocks. By G. S. Templeton, Director, United States Rabbit Experiment Station, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-139, 2 pp. June 1939. Received July.
- A survey of the annual fur catch of the United States. Prepared in the Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-140, 19 pp. June 1939.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

- Cottam, C. The eelgrass situation on the American Pacific Coast. Rhodora 41 (487): 257-260. July 1939.
- Enders, R. K. The physiology of reproduction in the mink. Amer. Fur Breeder 11 (10); 6, 8, illus. April 1939; and Fur Jour. 5 (6): 3-5. April 1939.
- Hicks, L. E. Population studies of the European starling in America. 9th International Ornithological Congress Trans. pp. 457-474, illus. Oct. 1938.
- Imler, R. H. Note on Kansas and Colorado starlings. Wilson Bul. 51: 46. March 1939.
- Lincoln, F. C. The migration of American birds. Doubleday, Doran & Co. 189 pp., illus. June 6, 1939.
- Sora rail breeding in Virginia. Auk 56: 331. July 1939.
- The individual vs the species in migration studies. Auk 56: 250-254. July 1939.
- Scott, T. G. Progress report of the Iowa Cooperative Wildlife Research Unit, October 1935 - February 1939. Iowa Ext. Serv. Bul. pp. 90-97, Feb. 1939.
- Templeton, G. S. The rabbit business. Industrial Bul., June 1939, p. 148.
- Zahniser, H. Indoors and out. Nature Mag. 32: 303, 351. June/July 1939.

Press and Radio Information and Addresses, copies of which (chiefly in mimeograph) may be obtained from the Division of Public Relations, have been issued as follows:

- Rare albino buffalo is sighted in Alaska. Press statement 2199-39. Released June 21.
- Establish new wildlife sanctuary in Minnesota. Press statement 2214-39. Released June 22.
- 20 areas in N. Dak. made refuges for wildlife. Press statement 2206-39. Released June 28.
- 1939 duck stamps go on sale July 1. Press statement 8-40. Released July 5.
- Eastern shore duck seller gets 20 days. Press statement 9-40. Released July 5.
- 10 Texans fined \$1,311 for exceeding waterfowl limits. Press statement P. N. 68961. Released July 15.
- U. S. wildlife bureau reports diminishing fur animal supply and summarizes States fur "take". Press statement 48-40. Released July 16.
- \$1,380,000 allotted to States for wildlife restoration work. Press statement P. N. 68962. Released July 17.
- Duck foods disappearing from Lake Erie marshes. Press statement P. N. 68963. Released July 18.
- Canada geese spend summer on Delaware wildlife refuge. Press statement P. N. 69524. Released July 23.
- Deer population threatened as food supply is depleted. Press statement P. N. 69525. Released July 23.
- Caws cause for joy, not sorrow. In "Current Conservation" (clip sheet), Vol. II, No. 9, August 1939.
- Take air for game counts. In "Current Conservation" (clip sheet), Vol. II, No. 9, August 1939.
- Youth learn game lore. In "Current Conservation" (clip sheet), Vol. II, No. 9, August 1939.
- Game agents and Northwest mounted police smash ring smuggling pelts into Alaska. In "Current Conservation" (clip sheet), Vol. II, No. 9, August 1939.
- Waterfowl in Michigan's Seney marshes. Radio talk by Howard Zahniser, National Farm and Home Program. June 15.
- Research on wildlife management. Radio talk by Howard Zahniser, National Farm and Home Program. June 30.
- Let's visit a national forest--Santa Fe, New Mexico. A radio discussion between Forney Rankin, Radio Service, Elizabeth Pitt, Forest Service, Department of Agriculture; and Howard Zahniser; National Farm and Home Program. June 30.
- "Fur farms and fur coats". Farm Flashes. July 3.

## WILDLIFE RESEARCH

Appointed Assistant Chief of Division.--On July 17 Dr. W. B. Bell announced the appointment of Leo K. Couch as Assistant Chief of the Division of Wildlife Research, effective June 30. Mr. Couch was first employed in the Biological Survey February 20, 1919. He was detailed to the Division of Economic Investigations, later called Predatory Animal and Rodent Control, for rodent-control work in Washington. He conducted wildlife investigations and cooperative rodent control operations and later was appointed leader of rodent and predatory animal control work in the State. On May 1, 1936, he was transferred from the Division of Game Management, in which the Control Division had been included, by a reorganization, to the Division of Wildlife Research to act as liaison officer between the Biological Survey and the Forest Service on Emergency Conservation Work affecting wildlife in connection with CCC camp operations.

On April 1, 1937, Mr. Couch was assigned as assistant leader in the Section of Wildlife Surveys of this Division. He supervised and directed the work of the cooperative wildlife research units and studies in forest-wildlife relationships. As Assistant Chief of the Division, Mr. Couch will continue to be in charge of these projects, which will be handled as divisional functions, and will also serve as contact man and coordinator of the research programs to be conducted at the Patuxent Research Refuge.

Wildlife Surveys

Wildlife Development Programs Discussed.--Dr. Allen M. Pearson, leader of the Alabama Cooperative Wildlife Research Unit, reports that several days in June were spent in preparing material for the State Soil Conservation Committee and in conferring with members of the subcommittee on wildlife. Progress was made on the preparation of a State program and two district work plans were formulated. On June 28 the project leader conferred with several wildlife workers at Decatur concerning plans for wildlife development on the farm lands adjoining Wheeler Lake Refuge.

Mourning Dove Project Nearly Completed.--The mourning dove nesting season in Alabama was at its height during June and nests were relatively easy to locate, Dr. Pearson says. This season 55 functional nests were kept under observation primarily to obtain additional data on growth rate and development of the young. An adequate number of nests have now been studied to bring this phase of work nearly to completion.

Study Food Plantings.--Nearly 5,000 Cornus stolonifera obtained from Soil Conservation Service surplus stock were planted on 100 plots of the Northeastern Forest Experiment Station, New Haven, Conn., during May, according to Assistant Biologist John Pearce. The plantings are a continuation of the study begun last year of game food planting schemes for shrubs as interplantings on coniferous plantations.



Last year's experience indicated that better results could be obtained by using only one or two species.

The 100 plots were each planted with the following designs: (1) Single plant clump, (2) 1-1/2 foot triangle, (3) 3-foot triangle, (4) 3-foot square with 1-1/2 foot spacing, (5) 6-foot square with 3-foot spacing, and (6) 6-foot square with 1-1/2 foot spacing. All plots were interplanted between white pines planted 12' x 12'.

The rodent damage (cottontail rabbit and field mouse) to last year's plots was tallied. No distinct preferences could be noted for any of the seven species of plants used.

Final examination of the Childs-Walcott deer-repellent plots showed the hydrated-lime-cowdung mixture had no retarding effect on the opening of buds.

Study of Wild Turkey in Missouri.--Reporting on studies of the wild turkey in Missouri, Dr. Paul D. Dalke, leader of the Missouri Cooperative Wildlife Research Unit, states that three flocks of young turkeys with 15, 22, and 8 poults, respectively, were observed on the Eleven Points Refuge, Clark National Forest, Oregon County.

Six dummy nests, each containing seven turkey eggs, were placed on the refuge at points remote from the present turkey range. Of the six nests, five were either partially or completely destroyed. Three of the nests were visited by opossums, one by a raccoon, and one by a pilot blacksnake. The snake was actually observed devouring the eggs, while the tracks of the opossums and the raccoons were recorded in dust surrounding each dummy nest. One adult gobbler was killed by an unknown predator.

Ten gobblers and seven hens were observed at Indian Trail State Forest. The hens were seen separately, indicating that they were probably laying eggs or incubating birds.

Antelopes Holding Their Own at Wichita.--The antelopes on the Wichita Mountains Wildlife Refuge, Okla., generally remained together during April, and spent most of their time in the northern part of the buffalo pasture, Charles H. Rouse, associate biologist, reports. The band scattered to all parts of the refuge early in May, and the first antelope kids were reported by Ranger William E. Drummond on May 16. Four young are known to have been born. Repeated efforts have been made to check on these kids but with little success. No losses have been detected during the fawning period although it has been difficult to keep a close check during the past month.

In May Mr. Rouse discussed problems concerning antelope with officials of the New Mexico Game Commission who had trapped the animals and were familiar with their native range. These antelopes, the officials said, were taken from a sage brush range where the animals foraged to a great extent on the browse species occurring in that type. Juniper does not occur in any quantity in the association, and the antelopes were not known to feed on it. Thus, there is a possibility, says Mr. Rouse, that the absence of sufficient palatable browse species in the buffalo pasture may be a factor affecting the.

adaptability of antelopes to the refuge. It is also quite probable that the present refuge area was originally used by this species only during the summer, if at all, and that their winter range was the prairies and creek bottoms of the surrounding plains.

Early residents in this region have stated that antelopes were seldom seen in the area now included in the refuge. Mr. Rouse believes this would also indicate that perhaps there is a factor of suitable forage as well as parasites and predators affecting the reestablishment of antelope on the refuge.

Study Wild Turkeys on Wichita.--Four turkey nests reported by C.C.C. personnel and enrollees in June made a total of 15 nests located this season on the Wichita Refuge. Only 6 of the 15 nests were successful in bringing off young poults.

Gobblers continue following the females. Groups of four to seven young gobblers, however, were frequently seen by themselves. Two matings were noted in the field and two young broods have been kept under observation during June. Apparently the older hens that are unsuccessful in bringing off an early brood are again mating and laying a second clutch, while the younger hens are now mating and laying. The report recommends that this later nesting be checked next spring with birds of definite known ages banded with color bands.

Seven fresh droppings were washed, dried, and packaged for food examination. With the exception of 6 Tragia seeds, the crop of a hen collected near Cold Springs contained nothing but insects, nearly all of which were grasshoppers. Field observations, however, indicate that although turkeys prefer insects, they were feeding a great deal on seeds of Celtis, Paspalum, Leptoloma, Tragia, and Cathartolinum. Sixteen turkey stomachs, collected since July 1938, including injured and sick birds, were packaged for shipment to the Food Habits Section.

Predators Kill Chinese Pheasants.--Since November 1938, when 100 Chinese pheasants were counted on Protection Island, Wash., 8 males and 7 females have been killed, according to recent information from Arthur S. Einarsen, leader of the Oregon Cooperative Wildlife Research Unit. Hugh Ross Newcomb, graduate student in charge of the study of game birds on an island under natural conditions, explains that 14 birds were killed by predators and 1 by a mechanical fence. "Roughly, 15 percent of the population has been removed by the general hazards of life, exclusive of any effect of mankind," writes Mr. Einarsen.

Talk Before Game Protectors.--Dr. Logan J. Bennett, leader of the Pennsylvania Cooperative Wildlife Research Unit; Dr. P. F. English, of Pennsylvania State College; and Allan Studholme, graduate assistant, gave lectures at the Game Protector Training School at Brockway, Pa., on June 5, 6, 19, and 20.

Strip-count Areas Used for Deer Census.--In June Dr. Bennett spent 3 days on the Allegheny National Forest observing white-tailed deer census pellet-group quadrats and laying out an experimental water-fowl-food planting in Beaver Meadow Lake. A number of permanent strip-count areas were established in the Seven Mountains section, during May, and monthly counts on all strips and quadrats are now being made.

Has 231 Nests Under Observation.--Throughout June, Pierce Randall, of the Pennsylvania Cooperative Wildlife Research Unit, conducted an intensive study of the nesting activities of the ring-necked pheasant in Lehigh County. He had 231 nests under observation by June 30.

Foresters Study Wildlife Relationships.--Tracy Kuhn, graduate assistant in Forestry, spent half his time in June on a study of the availability of the respective mast species for wildlife use and on a study of the utilization of early spring buds, flowers, and fruits. The remainder of his time was spent in analyzing the contents of ruffed grouse crops. To date, 210 grouse crops collected last fall have been analyzed. Russell Norris, graduate assistant in Forestry, spent full time in making observations on the study of the relationship between the respective forest types and the game ranges. Mr. Norris is concentrating on field work this semester.

Work on Woodcock Banding.--This spring, John D. Beule, Mr. Norris, and Mr. Studholme observed that a high population of American woodcocks were breeding in the Barrens, Centre County, Pa. Subsequent study revealed the population in the area. A method of trapping woodcocks for banding was also worked out.

Ruffed Grouse Areas Selected.--A complete ecological study of the ruffed grouse in the respective forest types in central Pennsylvania is being made by Mr. Studholme, according to recent reports. Two experimental ruffed grouse areas in Centre County have been selected for this work. One tract is on the Barrens and the other on Nittany Mountain. The Barrens tract has been gridded, and daily observations are being carried on. Mr. Studholme is already making nest and brood studies.

Visits Three Counties.--During June, Dr. Bennett made observations on cottontails, ring-necked pheasants, white-tailed deer, and ruffed grouse in Huntingdon, Centre, Warren, and Elk Counties.

Crows Discourage Herons, Egrets.--Because of depredations and indirect interference by crows, the little blue herons and snowy egrets in a rookery at "Live Oaks", 9 miles south of Waller, Tex., had an unsuccessful nesting season, according to information received from Dr. Walter P. Taylor, leader of the Texas Cooperative Wildlife Research Unit. The colony was discovered by V. W. Lechmaun and R. H. Baker, field biologists, on April 4. The birds began laying on



April 10 and made no effort to renest after losses. Most of the birds left the area by April 20. It appears that crows may cause considerable damage at nesting time, Dr. Taylor states.

Crows also destroyed many nests of yellow-crowned and black-crowned night herons at the "Live Oaks" but did not damage as many of these as of snowy egrets and little blue herons.

Restore Beaver.--Dr. Taylor reports that two beavers were liberated on the Southworth place in Robertson County, Tex., by Graduate Student Arthur H. Cook, and Game Warden Sam Cavitt on May 5. A good deal of preliminary study was made of potential beaver sites in Brazos County.

Fires Destroy Nests.--Prairie fires were common in Harris County, Tex., and undoubtedly are destructive to Attwater prairie chickens, black mallards, quails, and other nesting birds, Dr. Taylor says. State Game Warden T. T. Waddell reports that a prairie fire in Austin County on April 14 destroyed five prairie chicken nests.

Students Take Trip to Mountains.--Dr. W. B. Davis, assistant leader of the Texas Cooperative Wildlife Research Unit, took a class of six students in fish and game to the Guadalupe Mountains from June 7 to July 17.

Observes Summer Habits of Mule Deer.--Dr. D. Irvin Rasmussen, leader of the Utah Cooperative Wildlife Research Unit, reports that Everett Doman, full-time assistant, continued the study on mule deer during June. Emphasis was placed on deer movement during the summer and on feeding habits.

Logan County Food-plots Studied.--From June 5 to June 24, with the help of Joe Rabb and Lorin Dedrickson, graduate assistants, an intensive plot food study was made on selected areas in Logan Canyon, Utah. These areas were not opened to domestic livestock grazing until July 1, and all plant utilization at the time of study was a result of grazing by deer. One hundred and fifty plots, 20 feet long and 5 feet wide, were laid out along deer trails in the aspen and brush types. The six plant species that occurred most frequently in each plot were listed in order of abundance. Each plot was studied carefully and the number of plants of the grass and weed species and the number of stems of the browse species that had been eaten off were counted.

If suitable areas that have not been grazed by domestic livestock can be found during the coming months this plot study will be continued throughout the summer. Dr. Rasmussen hopes that a reliable preference rating for the plant species may be derived from these data.

Visit Mammal Laboratory.--Charles Moore, of Delta, Colo., a well-known conservationist from the Rocky Mountain States, visited the mammal laboratory on July 5, to confer with S. P. Young.

Carl Lomen, former resident of Nome, Alaska, who developed the Territory's reindeer industry, conferred at the laboratory on June 17.

During that week, A. J. Van Rossem, of the California Institute of Technology, Pasadena, Calif., studied both bird and mammal specimens in the Biological Survey collections.

Ivan R. Tomkins, of the U. S. Dredge "Welatka", Savannah, Ga., visited A. H. Howell on July 14.

### Food Habits Research

TVA Problems Discussed.--On June 22 Dr. Clarence Cottam attended the 5th meeting of the Tennessee-Cumberland Basin Committee at Knoxville, Tenn., which was called for the purpose of reviewing and making desirable modifications in the Federal project lists for the Tennessee and Cumberland basins, reviewing recent activities of the TVA, and considering reports of the chairman of the committee. The various projects were discussed at length so that the committee members would know with what each of the projects dealt and the present state of their development.

Eelgrass Situation Improves.--Eelgrass in Meccox and Shinnecock Bays, along the coast of southern Long Island have been adversely affected as a result of new inlets formed by the hurricane last September, according to Dr. Cottam, who spent July 8 to 11 inspecting proposed wildlife areas near Shinnecock Bay and the eelgrass beds on the island. The eelgrass in other areas shows a slight improvement, Dr. Cottam believes, although the supply is still limited. Inspection was also made of stands in Barnegat Bay and other areas along the New Jersey Coast. These also showed some improvement.

Studies Made of Waterfowl Areas.--During May and June C. C. Sperry, associate biologist, inspected waterfowl areas near Hudson, Colo., and in the San Luis Valley, Colo., and later recommended developmental procedures.

Research Program Developing.--Lawrence W. Saylor spent 2 weeks in June at the Bombay Hook Migratory Waterfowl Refuge, Del., setting up the final ground-work for the refuge's research program, which the Section of Food Habits, in cooperation with the Division of Wildlife Refuges, is developing to correlate mosquito control with wildlife interests.

Nutrition Problems Studied.--During 5 days in June, Ralph B. Nestler, game nutritionist, and Woodrow W. Bailey, game propagationist, of the Patuxent Research Refuge, Md., visited private and State game farms in New Jersey, New York, and Pennsylvania to observe methods of management and feeding and to study the breeders' problems. Their itinerary included the following private farms: Hanna's Quail Farm, Oxford, Pa.; McCarty's Game Farm, Newfield, N. J.; Long Acres

Game Preserve, Berkeley Heights, N. J.; Sheridan's Pheasant Ranch, Berkeley Heights, N. J.; Woodbury Farms, Long Island, N. Y.; and Susquehanna Pheasantry, Clearfield, Pa. The New York State farms at Middle Island, Long Island, Albany, and Ithaca, and the Pennsylvania State farm at Loyalsock were also visited. The men conferred with Dr. Norris, Dr. Romanoff, and Mr. Long at Cornell University, and later visited Dr. Forbes and Professor Callenbach of Pennsylvania State College for a discussion of their research work on the physiology and nutrition of game birds.

New Goose Foods Observed.--During May Assistant Biologist C. S. Williams found that Canada geese on the Ruby Lake Refuge, Nev., were feeding extensively on horsetail (Equisetum) in preference to many other plants considered to be good foods. They were also feeding on other species not previously recorded. Goose production at Ruby Lake and at other Great Basin refuges appears to be readily susceptible to management practices, Mr. William says.

Use Self-baiting Traps for Bullsnares.--Nearly 200 snakes, nearly half of which were bullsnares, were captured in 25 traps in 1 month, according to Ralph Imler, of the Denver Food Habits laboratory. Mr. Imler, who conducted nesting studies on the Crescent Lake Migratory Bird Refuge, Nebr., during May and June, particularly studied the role of bullsnares to waterfowl reproduction and worked on methods to control these reptiles. Promising results were obtained, he indicates, through the use of cage traps combined with "drift fences", or wings, of a low height leading to them. This trapping procedure was developed by the Denver laboratory.

Similar traps are being tested on the LaCreek (S. Dak.) and Valentine (Nebr.) refuges, where bullsnares have also been reported a hazard to nesting waterfowl.

Although original plans called for the use of live bait as a lure, Mr. Imler asserted that the traps were, in fact, self baiting, since various rodents and other mammals or reptiles frequently entered traps in advance of the bullsnake. In this experimental work, all creatures not known to be detrimental to waterfowl were released.

Completes Canada Goose Studies.--For the third successive year Canada goose nesting studies at the Bear River Refuge, Utah, have been conducted by Mr. Williams, who studied 250 nests this season. The study was recently completed. Among the new observations that contribute to efficient management, it is reported, is that the most satisfactory brooding areas are almost invariably downstream from the nesting areas, regardless of relative suitability of nesting cover. Other observations include the correlation of local shifts in nesting populations with changes of environment, the reduction of nesting on an adjacent area as a result of heavy grazing, the discovery that greasewood is an important cover-type when it is near water, and that the California gull is of some significance as a destroyer of goslings. The number of California gulls on the refuge this year was larger than in 1938.



Increase in California Gulls Noted.--From May 12 to May 30, E. R. Kalmbach, of the Denver Food Habits Laboratory, visited the Bear River Refuge where waterfowl nesting studies were begun for the season. Besides recording customary data pertinent to such studies, special attention is being given to the possible effect of breeding California gulls that have greatly increased in numbers in recent years. In scope the studies are restricted to relatively small representative areas in this densely populated nesting ground. Marcus C. Nelson, who assisted in earlier studies on the Refuge, is the field leader in this program.

Try Aquatic Mower on Waterchestnut.--The War Department has recently purchased a Hackney Aquatic Mower for use in the control of the waterchestnut, which is a menace to fish, waterfowl, feeding grounds, and navigation in the Potomac River. Experimental tests are being made to determine the value of this equipment in controlling the plant in the extensive beds located near Alexandria, Va. Other types of machinery will be purchased in the future for experimental control purposes. Francis M. Uhler, of the Food Habits staff, is cooperating with Army engineers on these studies.

Personnel.--James W. Webb arrived from the Alabama Cooperative Wildlife Research Unit, Auburn, Ala., on June 22 to work as a collaborator in studies on the food habits of foxes, turkeys, and quails.

#### Distribution and Migration of Birds

Attends Meeting in West.--F. C. Lincoln left Washington on June 15 for Berkeley, Calif., to attend the A. O. U. meeting during the week of June 19. On June 23 he left Berkeley for Monterey where he attended the meeting of the Western Association of Game and Fish Commissioners. Enroute he inspected the "Point Lobos Reserve", an unusual State park in that it is maintained in a wilderness condition. Inspection also was made of the University of California wildlife experiment station in the Carmel Valley. Returning to San Francisco on June 25 Mr. Lincoln participated in the conferences with the regional directors and game management agents and attended the meetings of the International Association of Game, Fish and Conservation Commissioners.

At the executive session with representatives of the State game departments held on June 28 Mr. Lincoln presented the Bureau's report on the status of migratory game birds, a summary of the investigations made during the year in the four flyways. Leaving San Francisco on June 29 he went to Los Angeles where for 2 days he examined material in the Los Angeles Museum. On his return trip to Washington Mr. Lincoln conferred with Dr. George B. Saunders at his headquarters in Denver, Colo.

Flyway Biologists in Canada.--A letter dated July 9 "on board R. M. S. 'Nascope' between Quebec and Rimouski, P. Q.," has been received from Harold S. Peters, the Atlantic Flyway biologist. The Canadian Eastern Arctic Patrol is sponsored each summer by the Canadian

Government, which invites various scientists on these trips to obtain observations on the different branches of science to guide them in establishing a permanent scientific station somewhere in the northern regions. Mr. Peters is the only ornithologist on board and is hopeful of obtaining some valuable information and of getting a better idea of the country and the Canadian Government's plan for future scientific exploration and study of the eastern Arctic. He expects to get a plane for short trips over the interior at several stops.

Charles E. Gillham, the Mississippi Flyway biologist, arrived in Fort Norman, N. W. T., on June 8 and left almost immediately for Aklavik, where he outfitted with provisions for his trip to the coast. Great difficulty was experienced in obtaining a guide, Mr. Gillham says, because all natives were busy hunting muskrats, from which they made \$40 to \$100 a day. He obtained a Slavey Indian guide for his trip to the lower Delta and left Aklavik on June 16, arriving in Reindeer on the 17th after a rough trip by canoe. Mr. Gillham arrived at Kendall Island on the 21st where hundreds of nesting snow geese were observed. Handicapped by freezing cold weather and a heavy wind that blew water completely over the island, camp was maintained until the 29th when the return trip to Reindeer was made.

The last letter from Luther J. Goldman, the Pacific Flyway biologist, was dated June 17 from Marshall, Alaska. Work will be confined below Marshall in the Yukon Delta. Mr. Goldman states that so far evidence indicates a notable increase in the goose and duck population. Swans are reported increasing, and cranes have been observed in greater abundance.

Dr. George B. Saunders, the Central Flyway biologist, spent June at his headquarters in Denver, Colo., working on material collected last winter in eastern Mexico and making preparations for work in the Prairie Provinces of Canada during the next few months.

Banded Birds Pass 3-Million Mark.--During the fiscal year 1939 436,648 birds were banded. This is a large increase over any previous year and brings the grand total to 3,284,142. Returns for 1939 numbered 26,982, bringing the grand total to 202,897. Following are the figures for some species banded in large numbers during the past year: Chimney swift, 71,623; purple finch, 21,595; pintail, 19,160; and mallard, 16,732.

Interesting Returns from Banded Birds.--The following are returns of outstanding interest from banded birds, showing band number, place, and date of banding, and place and date of recovery:

Mourning dove:

34-307997, Fla., Key West, 2/27/35 Ark., Lake City, 1/27/37

Barn owl:

B600771, Calif., Chino, 11/20/30 Calif., Riverside, 5/2/39

Screech owl:

295313, Calif., Pomono, 5/28/26 Calif., Claremont, 5/5/39

Starling:

37-208837, Ohio, Cincinnati, 3/10/37 Vt., Newport, 4/7/39

38-204492, N.Dak., Kenmare, 8/3/38 Mont., Lindsay, 2/19/39  
(1st record for State)

## Purple finch:

B129117, N. Y., Elmhurst, 10/19/31

Conn., Woodbridge, 3/17/39  
(trapped and released)

## White-throated sparrow:

37-139274, Tenn., Memphis, 3/10/37

Man., Grandview, May, 1939.

Fur Resources

47th State to Protect Fur Animals.--Colorado became the 47th State to pass a conservation bill protecting fur animals and regulating the fur trade in the State when Governor Carr signed the bill on May 10. E. R. Kalmbach, of the Food Habits section, at the request of Colorado officials and conservationists, devoted considerable time during the past 2 years in advising and aiding in the drafting of the bill, according to Frank G. Ashbrook. Passage of this legislation, Mr. Ashbrook says, is a matter of more than ordinary importance to Colorado, since it was one of the two States having no regulations on the take of fur animals except those pertaining to the control of troublesome beavers. Previously there had been no other restrictions on trapping fur animals in that State. The present legislation is the result of activities of trappers, fur dealers, conservationists, and State and Federal agencies and officials.

Attends Fur Fashion Show and Exposition.--Mr. Ashbrook attended the Fur Fashion show and exposition held in New York City June 6-9. A fashion show and banquet were held in the Waldorf Astoria Hotel on June 6. Fur garments were displayed by mannequins. Karakul, mink, beaver, and raccoon furs were in prominence, and many of the more stylish garments were made from these furs, Mr. Ashbrook says. Many of the designs were very lavish and were displayed to impress the buyers with the different uses made of these various furs. In the Pennsylvania Hotel two floors were occupied by fur manufacturers to display their garments. On June 9 another style show was staged in the Pennsylvania Hotel. The garments on display were more practical and were the type that would sell readily. The consensus was that the show and exposition stimulated interest in the buying of furs, since many buyers came from all sections of the country to inspect the garments.

Metabolism Study of Rabbit Feeds Being Continued.--George S. Templeton, director, U. S. Rabbit Experiment Station, Fontana, Calif., has collected samples of vetch hay and melilotus hay, as well as dried samples of young growing wheat, alfalfa, and blue grass for the study of the metabolizable energy and digestible coefficients by Dr. E. B. Forbes, head of the Institute of Animal Nutrition, Pennsylvania State College, State College, Pa. Dr. Forbes' studies are the first that have ever been conducted with domestic rabbits. Nearly 20 different kinds of feeds are being studied.



Fourth Annual Field Day Held.--Some 350 rabbit breeders from all sections of California attended their fourth annual Field Day, which was held at the U. S. Rabbit Experiment Station on Sunday, May 21, according to information received from Director Templeton. A morning program, which was held in the Fontana High School auditorium, consisted of a discussion by Mr. Templeton of some of the experimental work that is under way at the Station and of recommendations for feeding rabbits. Dr. Edward L. Vail, of the Disease Control Section, conducted the round table discussion on diseases and common ailments of the rabbit. In the afternoon the Station was open for inspection. Breeders came from points as far distant as San Francisco, Bakersfield, El Centro, and San Diego. When breeders will drive from 300 to 400 miles to be present for a session that starts at ten o'clock in the morning, says Mr. Templeton, it is quite evident that programs of this type are effective.

Eastern Shore Weather Affects Muskrats.--The prolonged dry weather at the Blackwater Migratory Bird Refuge, reports Dr. Herbert L. Dozier, director, U. S. Fur Animal Field Station, Cambridge, Md., resulted in a record lowering of the water level in the large pond and almost dried up the small pond and marsh enclosures. Some water areas on the Government marsh are still dried up to such an extent that it has favored predation on the muskrat by the red fox and other enemies.

Muskrat Activity in General.--Unusual muskrat activity on the Blackwater Refuge marsh on June 9 is reported by Dr. Dozier. During a field trip by a laborer-patrolman approximately 40 muskrats swam within a few feet of the observer. Such unusual activity and tameness has not been noticed since that date. Of 34 muskrat houses that were opened on June 13 only a single litter of young was found. During the 3 successive days, not one recently born litter was found in 90 houses examined.

Interesting Notes from Field Station.--During June the green, or spring, frog (Rana clamitans) has been abundant in the muskrat breeding enclosures at the Fur Animal Field Station and has been observed living inside of nest boxes in harmony with the muskrats. Numerous specimens of the water snake (Natrix sipedon), and the black snake (Coluber constrictor) have been attracted to the area evidently by the abundance of this frog. Wm. S. Heit found two ticks on his arm after he had opened muskrat houses on the marsh several hundred yards from any shrubbery or any islands. These ticks were noted crawling immediately after examination of the houses.

Addresses Canadian Fur Farmers.--Charles F. Bassett, director, U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., was invited by the Ontario Fur Farmers Association to give a talk at the summer session held at Guelph on June 14 and 15. He discussed

the experimental work conducted at Saratoga Springs. Mr. Bassett visited several of the larger, progressive silver fox and mink farms in the Great Lakes region of Canada. The fur farmers of Canada have always been appreciative of the practical type of fur animal experimental work that is being conducted by the United States Government, Mr. Bassett says. He also visited one of the mink ranches that had set up a group of furring pens in a wooded section of a swamp. These pens are placed in these swamps to obtain a lower temperature and to increase the humidity. Both factors are believed to be important to the production of the best quality of fur.

Prominent Canadian Visits Station.--Dr. John C. Jack, in charge of fox demonstrations of Maritime Provinces, and former animal nutritionist and physiologist with the Dominion Experimental Farms, Summerside, Prince Edward Island, stopped at Saratoga Springs June 19 and 20 on his return from the Ontario fur farmers meeting. Dr. Jack had not visited the station for many years and according to reports was pleasantly surprised at the expansion and development in physical equipment. Charles E. Kellogg, of the Washington office, was visiting the station at the same time and discussed fur farming experimental work with Dr. Jack.

Try Soybeans in Fox Feed.--The use of soybean meal in fox feeds is one of the problems being studied this year by Mr. Bassett. Soybean meal is manufactured by the expeller method, hydraulic method, and the Naptha extraction method. The experimental diet is being fed to equalized groups of fox pups and to mature animals. This study is a continuation of the search for cheaper proteins that possibly might be substituted for the raw meat in the ration for foxes.

Progress in Fur Animal Metabolism Studies.--During the past 2 months, digestion trials were run on raw horse meat mixed with cooked and raw corn starch in varying amounts and with raw and cooked corn, oats, and wheat all ground to the same degree of fineness, according to Dr. John K. Loosli, agent, in charge of the fur-animal metabolism studies in cooperation with Cornell University. Even with extreme variations in the protein content of the ration the protein utilization is remarkably similar, Dr. Loosli states. Indications are that the proteins of corn and wheat are fairly well utilized. Additional digestion balances with minks were made with canned fish, beef tripe, horse liver, beef spleen, and a prepared dry mixture. Last month 22 fox pups and two adult females were purchased and started on experiment and 22 mink kits provided for use in growth studies.

Visits Washington Office.--Dr. L. A. Maynard, in charge of the Laboratory of Animal Nutrition at Cornell University, Ithaca, N. Y., visited the Washington office on June 29. Dr. Maynard is general supervisor to the fur-animal metabolism studies being conducted there in cooperation with the Bureau. It has been found necessary in the transfer of the Bureau to the Department of the Interior to effect agreements with the Bureau of Animal Industry so that funds from the

Secretary's Special Research can be used on these studies during the ensuing year.

Study Mink Blood.-- A complete study of the properties of mink blood is being conducted by Dr. Laurence Irving, head of the Department of Physiology and Zoology, Swarthmore College, Swarthmore, Pa., with the assistance of Dr. Robert K. Enders, of the Survey, and other associates at Swarthmore. Blood samples were taken from 12 minks and were subjected to various tests. Officials of the Section of Disease Control are now giving these minks a distemper virus followed by serum. After the minks have recovered, another blood study will be made to determine its properties. This study has a practical application, says Mr. Ashbrook, in that the oxygen-carrying capacity of the blood is correlated with the general health and reproduction in the mink. Many farmers believe that the animals will not breed the spring following an attack of distemper.

Personnel Added for Mink Study.--Following an intensive study with some 90 minks last fall, winter, and spring, the efforts of the cooperative unit at Swarthmore College studying the reproduction of fur animals are being concentrated on the analysis of hundreds of slides and cross sections that have been obtained. Dr. Thomas Forbes and John K. Love have been reappointed temporarily to assist in this study. Bruce R. Valentine has also joined the staff for a short period. The minks surviving this study have been transferred to the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y.

Personnel.--Dr. John K. Loosli, agent in the Bureau in fur-animal metabolism studies since December 1938, resigned on July 15 to accept a position at Cornell University as assistant to Dr. L. A. Maynard. Dr. Sedgwick Eugene Smith was appointed to succeed Dr. Loosli. Dr. Loosli will continue to devote considerable time to the fur-animal nutrition work.

Edward P. Thatcher, a student summer assistant from Swarthmore College, reported to the U. S. Fur Animal Field Station, Md., on June 20, and has been making a series of stained vaginal smears of the muskrat for Dr. Enders, who is studying the reproductive cycle. Mr. Thatcher is also conducting a check on the present flora and muskrat abundance and changes that have occurred on the twelve 100-foot square plant-survey plots laid out and mapped last July and August.

#### Disease Control

Gives Radio Talk, Helps Writer.--Following his radio talk on wildlife diseases, on June 11, Dr. J. E. Shillinger assisted the American Wildlife Institute in the preparation of an article for distribution to various newspapers. The article, which was illustrated with photographs showing various phases in the study of waterfowl diseases, was released in the Institute's clip sheet, American Wildlife Lines.



Botulism Breaks Out in Montana.--At the request of the Division of Wildlife Refuges, Dr. Erling R. Quortrup has been assigned to make an investigational trip to the Lake Bowdoin and Medicine Lake Refuges, Mont., to inspect conditions there and confer with local superintendents on the most practical method for controlling an outbreak of botulism in waterfowl on these areas. The new laboratory trailer, which has been provided for the use of members of the Section of Disease Control at the Bear River Migratory Bird Refuge, has been completed and is being put into use. The cabinets and other fixed furnishings were constructed by CCC labor. This vehicle appears to be an excellent means of transportation to field stations.

Visits Fur Farmers.--During June Dr. McKenney visited the fur farmers along the Cascade Range and in the Spokane Valley to obtain information on aspects of disease control among stock on fur farms in that area. On this trip he checked the results produced by immunizing minks with autogenous vaccines against distemper. He also conducted preliminary tests on foxes suspected of being affected with Bang's disease.

Addresses New England Group.--At the meeting of the New England Fur Farmers, held in Northampton, Mass., on June 7, Dr. Shillinger described the modern knowledge of distemper in fur animals. On his return to Washington, he conferred with Dr. W. A. Ellison in New York City on disease caused by food poisoning. Recently several cases of this nature have caused losses among silver foxes.

Speaks at Summer School.--Addressing the annual session of the International Fur Farmers Summer School, which was held June 21-23 at Milwaukee, Wis., Dr. Shillinger discussed the problems of production, disease control, and marketing. Fur producers from all over the United States and various parts of Canada attended the sessions. Enroute Dr. Shillinger conferred with veterinary organization officials at Chicago and with pathologists on wildlife diseases at Michigan State College, East Lansing, Mich.

#### FEDERAL AID TO WILDLIFE RESTORATION

16 States Renew Research Projects.--All the 16 States that initiated research or investigative projects under the Federal Aid Act last year requested that this work be continued during the fiscal year 1940, according to Mr. Day. "Several types of Federal Aid projects, particularly those of a research or investigative nature, which are designed to operate over a period of years, are most frequently approved on a fiscal year basis, and these projects require annual renewal", he explains.

Seventeen projects of this type were renewed as of July 1, 1939, by approval of the Acting Chief of the Bureau. The 16 States are: Colorado, Delaware, Illinois, Maine, Massachusetts, Michigan, Missouri, Nebraska, New Hampshire, New York, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, and Wyoming.

The estimated cost of the 17 projects this year amounts to \$158,000.

Takes Inventory of Wildlife Resources.--An inventory of the wildlife resources in Alabama was approved on July 7 as a Federal Aid project for the Alabama State Fish and Game Department. The State will be systematically surveyed, and work will be directed toward the determination of the present distribution and approximate population of the more important game and fur animals of Alabama.

Species to be given primary consideration will be white-tailed deer, wild turkeys, and bobwhite quails. Squirrels, foxes, waterfowl, mourning doves, rabbits, opossums, raccoons, muskrats, black bears, minks, and otters will also be studied. An effort will be made to determine the limiting factors involved in the restoration of any and all of these species, what restoration possibilities exist, and the research work most needed to facilitate practical restoration and management programs.

The Alabama Polytechnic Institute, University of Alabama, U. S. Forest Service, U. S. Soil Conservation Service, U. S. Farm Security Administration, and the Biological Survey will cooperate with the State Game Department in the conduct of this work.

Kentucky to Establish Sanctuary.--Acquisition of a wildlife restoration unit in Harlan County, Ky., which was submitted for approval by the State Department of Conservation's Division of Fish and Game, was approved on June 22. An inviolate perpetual sanctuary under fence with a resident game manager in charge will be erected, it is said. Food, cover, and water will be developed. Management problems will be worked out on deer, wild turkeys, ruffed grouse, and fur animals.

Surplus wildlife produced on the area will be used to restock surrounding lands. Timber constitutes the prevailing cover type. Approximately 100,000 acres, surrounding the acquisition unit, are now under a 10-year lease to the Kentucky Department of Conservation as a game refuge.

National Forests Set Aside 62,000 Acres.--The Mississippi State Game and Fish Commission, in cooperation with the U. S. Forest Service, has selected areas to be developed for, and stocked with, deer, turkeys, and beavers in suitable locations on the Leaf River District Wildlife Area in Perry and George Counties, on the Chickasawhay District Wildlife Area in Wayne County, and on the Bienville National Forest Wildlife Area in Scott County. Work on the project is to begin July 1.

The following acreages have been set aside as wildlife management areas: Leaf River, 32,560; Chickasawhay, 16,705; and Bienville, 12,850. Food and cover for wildlife will be developed on these tracts, and, where necessary, some restocking is contemplated. To insure wildlife the greatest possible opportunity to take advantage of the work done and to become well established, the Game and Fish Commission and the Forest Service have agreed to close the season for all game

birds, game animals, and fur animals on these areas for 5 years.

Lynn H. Webb has been appointed development manager to direct operations in the field. The Forest Service, Bureau of Fisheries, and Biological Survey are cooperating with the Commission in the development and management of the areas.

Will Study Farm Game Problems.--Federal Aid funds for a study of several phases of the farm game problem were approved for a project by the Division of Game and Inland Fisheries of the North Carolina Department of Conservation and Development on June 29. A more intensive investigation of the nesting season of mourning doves in relation to the season for hunting these birds in the State will also be made.

The State will study the effectiveness and economic feasibility of some recommended cover-manipulation practices. Provision has been made to assign men to study the entomological aspects of the practice of leaving fence rows, hedge rows, and other uncultivated areas on farm lands. The management of cotton rats and gray squirrels will also be studied.

J. W. Kistler has been appointed project leader. The following organizations have indicated their willingness to cooperate in the work: The Experiment Station, Soils Department, Extension Service, and Botany Department of the North Carolina State College; U. S. Soil Conservation Service; North Carolina Forest Service; and the State Department of Agriculture.

Two New Lakes for Carolina Sandhills.--Construction of two dams in Richmond County, N. C., by the State Department of Conservation and Development was approved as a Federal Aid project on June 16. This will be a cooperative undertaking between the Division of Game and Inland Fisheries and the Soil Conservation Service.

Although lakes and ponds are at a premium in this vicinity, the North Carolina Sandhills are characterized by rolling terrain with clear streams. Past experiences have demonstrated that wildlife is benefited by small lakes such as those proposed. The limited number of lakes now available are focal points for wintering waterfowl, shorebirds, waders, song birds, raccoons, deer, and nesting wood-ducks. The lakes will probably be stocked with the now rare Carolina beaver.

Conduct Forest Wildlife Studies.--The Virginia Commission of Game and Inland Fisheries on July 14 received approval for a project that supersedes the original study of the effect of clearings in forests on wildlife. William Russell DeGarmo has been selected as project leader. In the new study, which has been broadened so as to be more inclusive, an effort will be made to determine prior to the initiation of management practices the present wildlife populations, density, and distribution; to determine the most economical and practical type of game management on forest lands, including a study of clearings under various conditions; to keep records of the use by wildlife of the clearings; and to determine the effect of various timber management practices on wildlife populations.



Studies will be conducted on the Mountain Lake Demonstration Area in Giles County, the Haven State Game Refuge in Roanoke County, and the Big Levels Game Refuge on the George Washington National Forest in Augusta County.

The Virginia Polytechnic Institute, through its Departments of Biology, Geology, Entomology and Agronomy, and the Virginia Cooperative Wildlife Research Unit, the Virginia Agricultural Experiment Station, U. S. Forest Service, and the Biological Survey will cooperate with the Game Department in this study.

Personnel.--Howard B. Leach, formerly associated with the Soil Conservation Service, assumed his duties as traveling accountant with the Division on June 1. His official headquarters will be Washington, D. C.

Charles E. Sebastian was transferred from the Division of Administration on June 26. He will be stationed in Washington as a junior administrative officer.

Fred R. Kessler, formerly of the Division of Land Acquisition, was transferred to the Division June 26 as associate acquisition specialist.

D. E. Woodward, affiliated with the Division of Land Acquisition since 1930, was transferred to the Division on June 26 as associate regional inspector. He will be stationed at Denver, Colo.

Walter A. Gresh, whose appointment as regional inspector became effective July 13, had previously been affiliated with the West Virginia Conservation Commission, the T. V. A., and the Pennsylvania Game Commission. He will be stationed at Atlanta, Ga.

Oscar H. Johnson accepted an appointment with the Division as regional inspector effective July 24. Mr. Johnson's activities in the conservation field are well known. He served as director of the South Dakota Fish and Game Department from 1924 to 1939. He will be stationed at Denver, Colo.

#### LAND ACQUISITION

20 Easements Established.--On June 12, President Roosevelt, by Executive orders, established 20 easement refuges in North Dakota, as follows: Ardoch Lake, Brumba, Cottonwood Lake, Hiddenwood Lake, Hobart Lake, Lake Elsie, Lake George, Lake Ilo, Lake Nettie, Lake Patricia, Lake Susie, Lake Zahl, Lambs Lake, Legion Lake, Maple River, Pioneer Lake, Pleasant Lake, Rock Lake, Shell Lake, and Sibley Lake.

The President also issued the following Executive orders: On June 12, one enlarging the Long Lake Migratory Bird Refuge, N. Dak.; on May 30, one entitled "Changing the Name of the Nine-pipe Reservation to Nine-Pipe Migratory Waterfowl Refuge and Adding Certain Lands Thereto--Montana"; and on June 15, one establishing the Talcot Lake Migratory Waterfowl Refuge, Minn.

Conservation Commission Meets.--A meeting of the Migratory Bird Conservation Commission was held on July 31. The program of proposed purchases considered by the Commission, while not large as to acreage, contained several tracts that are important to the Division of Wildlife Refuges, because of administration necessities.

### Appraisals and Negotiations

Section Head Appointed.--Albert J. Rissman, formerly stationed at Des Moines, Iowa, recently was appointed in charge of the Section of Appraisals and Negotiations. His training and experience well qualify him to discharge his new duties, Mr. Dieffenbach says, and it is anticipated that, with the changes that are occurring within the Division, growing in part out of the transfer of the Bureau to the Department of the Interior and to the increased volume of examination work under the Pittman-Robertson Act, Mr. Rissman's transfer to Washington is a timely one.

Complete Report.--The Division has, since July 1, completed the compilation of an elaborate and detailed Quarterly Report, showing the status of all lands acquired by Executive orders, purchase, or otherwise throughout the United States, and also showing the current status of all lands that are in the process of acquisition by purchase or through other action by the Migratory Bird Conservation Commission.

S.C.S. Gives Lands to Survey.--At the close of the fiscal year the Soil Conservation Service had successfully completed the requisite steps for the vesting of title in the United States to all the lands that the S.C.S. is buying for the Biological Survey for refuge purposes. Most of the areas originally were purchased or about to be purchased for resettlement projects. Many tracts have been or are in the process of being taken by declaration of taking, and, from the administrative point of view at least, problems arising through the delays in getting possession of these lands will be removed. It will, nevertheless, be necessary in due course to go ahead with regular condemnation proceedings in all cases, thus still leaving a large burden on this Division in completing those proceedings.

Join Survey Staff.--Jesse L. Brightwell has been put directly in charge of the title work incident to the acquisition of lands, Mr. Dieffenbach announces. Joseph S. Needle will assist in this work. Both men were transferred to the Biological Survey shortly before July 1 from the Office of the Solicitor of the Department of Agriculture. Mr. Brightwell's training and experience on title work for the Biological Survey have been extensive and marked by satisfactory accomplishments, according to Mr. Dieffenbach. He is thoroughly

familiar with the methods and personnel of the Division. Mr. Needle's training and experience have centered chiefly on acquisition work in the Atlantic Seaboard States, and he is otherwise equipped to assist on title problems that arise in connection with purchase work by the Biological Survey.

To Enlarge Refuges.--Elmon Radway was detailed to the Montezuma Refuge, N. Y., to prepare material for the arbitrary condemnation of certain lands within the area needed to complete the refuge program there. Later he went to the Moosehorn Refuge, Maine, to negotiate for the purchase of lands needed to complement the lands already acquired.

Offices Consolidated.--Because of curtailed activities in the West, the Denver office has been consolidated with the Des Moines office, which will discharge all work lying west of the Allegheny Mountains.

The area office has been exceedingly busy in the past year, Mr. Dieffenbach says, many activities growing out of perfection of titles to lands in the process of title examination, and in connection with condemnation work, as well as the examination of lands under the State Aid program. The area office, as well as the Washington office is now perfecting material needed for the prosecution of many condemnation cases that will come up early in the fall and throughout the winter months.

#### Surveys and Maps

Work on Proposed Refuges.--Arthur A. Riemer recently made several brief trips to Philadelphia, Pa., and Camden, Trenton, Burlington, and other points in New Jersey in connection with land-record data and boundary surveys on the proposed Brigantine unit in New Jersey. Mr. Riemer and Wm. A. Schmidt have recently contacted the Surveyor-General of West Jersey and the Council of Proprietors of West Jersey at Burlington in connection with land grants and records pertaining to proposed refuges.

Mr. Schmidt and Geo. L. Ducret went to Burlington in June to search for land records on the proposed unit. Kenneth C. Kern, assistant cadastral engineer; Marion E. Phillips, assistant cadastral engineer; Geo. L. Ducret, assistant engineering aide; Lee Roy Woodruff, assistant engineering aide; and Walter T. Hoese, under engineering aide, have been detailed to the area to make boundary surveys.

Goes to Court.--Mr. Riemer attended court in Baltimore, Md. on June 12, 13, and 14, when condemnation proceedings on the Patuxent Research Refuge, Md., were held.

Work Stops on 2 Refuges.--Boundary surveys on the Necedah Refuge, Wis., are well under way, according to Mr. Riemer. T. M. Conrardy, assistant cadastral engineer, and Wesley R. Pearson, under engineering aide, as well as some temporary appointees were assigned to this project in April.



Surveys on the Noxubee Refuge, Miss., were abandoned on June 10 for lack of funds. Less than 2 weeks of actual field work had been conducted and the services of temporary appointees were necessarily terminated. Regular personnel were assigned to other units. Boundary surveys on the Piedmont Refuge, Ga., also were abandoned on June 30 because of lack of funds. Temporary personnel were terminated and regular personnel were transferred to other work.

Personnel.--Bert G. Dakama was appointed on June 1 as apprentice draftsman.

Jack H. Chipps, chief draftsman, who had been employed in the Division of Land Acquisition since 1931, resigned on July 5 and has accepted a position with the Standard Oil Company of Venezuela. He is stationed at Caracas, Venezuela.

Bernard G. Allen, assistant engineering aide, assigned on July 21 to accept a position with the War Department.

### WILDLIFE REFUGES

Increased Nesting Noted on Sacramento.--Despite poor results in the surrounding area, nesting conditions on the Sacramento Migratory Waterfowl Refuge, Calif., were excellent and attracted a variety of breeding birds, according to a report recently received from Refuge Manager Peter J. Van Huizen. It was estimated that three to four times more mallards nested on the refuge this year than in 1938, when 200 pairs were noted. A few shovelers and some Forster's terns were found breeding there for the first time since the refuge was established. Other nesting birds were redheads (10 to 12 pairs), pied-billed grebes, green-winged teals, and black-necked stilts. Last year stilts had 2 or 3 nests, this year at least 100.

Unusual Bird Records Established at Bombay Hook.--A pair of gadwall ducks nested on the Bombay Hook Refuge, Del., this summer for the first time in the history of the refuge, Refuge Manager John F. Herholdt reports. The brood was hatched and is being reared in the tidal salt marsh. A total of 37 Canada geese has been present on the refuge since June 14. Local inhabitants say that never before, to their knowledge, has a flock of geese remained in the area throughout the summer. Mr. Herholdt also reports seeing a female wood duck with 17 newly-hatched young. He states that the ducklings were so uniform that there was little chance of their coming from two or more broods.

Many Birds Using Florida Island Refuges.--All the Florida island refuges are well populated with nesting birds, according to Patrolman Wm. C. Lehmann. About 2,000 pairs of herons and egrets are nesting on the Cedar Keys Refuge, and a group of cormorants is nesting on the Anclote Refuge. Several thousand man-o'-war birds are using the Indian Key Refuge as a resting place, and about 2,000 cormorants and 1,000 herons are nesting there. Mr. Lehmann says he saw 21 roseate

spoonbills on Indian Keys this spring. All nests on the Passage Key Refuge were destroyed by the tide on June 13, but Mr. Lehmann believes the birds may nest there again this year. He estimates that some 8,000 birds, mostly brown pelicans, were on and near the Brevard Refuge on June 23. At least 200 pairs of birds are using the Pelican Island Refuge this year, the first time in several years that this area has attracted birds. All other Florida refuges, with the exception of Matlacha and Caloosahatchee, have good bird populations.

Refuge Has Rare Visitors.--Besides the great white heron, for which the refuge was primarily established, several other birds occur on the Great White Heron Refuge, Fla., Refuge Manager Earle R. Greene advises in a recent report. Among these are the reddish egret, scissor-tailed flycatcher, Wurdemann's heron, short-tailed hawk, mangrove clapper rail, white-crowned pigeon, Maynard's cuckoo, Key West vireo, black-whiskered vireo, and Maynard's redwing. Mr. Greene states that although an accurate estimate of the number of great white herons on the refuge has not been possible in the short time he has been stationed there, he believes there are now more on the refuge than there were a year ago.

Okefenokee Refuge Popular with Fishermen.--During the last fiscal year 47,223 fish were caught by 5,317 fishermen on the Okefenokee Wildlife Refuge, Ga., according to Refuge Manager John M. Hopkins. Of these 6,563 fish were taken by 1,026 fishermen during June. The most commonly caught fish was perch, followed by mudfish, jackfish, catfish, and bass.

Canada Geese Feeding on Cocklebur.--Most of the Canada geese on the Deer Flat Refuge, Idaho, are feeding, by preference, on cocklebur this spring and summer, according to Refuge Manager Ralph C. Winslow. There is a rank new growth of this plant on the sandy beach at the northeast end of the refuge where approximately 300 geese are feeding during their eclipse period. The plant is in the two-leaf stage and its stems are very tender and readily consumed by the birds. Though an ample supply of lovegrass, foxtail, and many other species of plants are available the geese seem to prefer the cockleburs.

Reports Fish Take.--In 4 months 10,138 fishermen caught 67,239 fish on the Chautauqua Refuge, Ill. Refuge Manager Philip Nelson's report shows that the catch consisted of sunfish, 50 percent; bass, 20 percent; crappies, 20 percent. The remaining 10 percent included bullheads, catfish, and perch. These figures are only for fishermen who rented boats. On May 10 the Illinois State Conservation Department planted 2,000,000 wall-eyed pike fry in the refuge waters.

Killdeer Nest on Refuge Road.--The nest of a pair of killdeer was found within a foot of the wheel track on the road to headquarters at the Lacassine Migratory Waterfowl Refuge, La. Refuge Manager Earl L. Atwood states that four eggs were laid, and all of them hatched. As soon as the nest was found, stakes were placed around it to protect it from passing cars.

Waterfowl Increasing on Blackwater.--An increased use of the Blackwater Migratory Bird Refuge, Md., by waterfowl during the last fiscal year has been reported by Refuge Manager David V. Black. In September and October, during periods of greatest concentration, about 35,000 ducks were on the refuge on 1 day. Nesting blue-winged teals and black ducks also increased, about 400 and 500 pairs, respectively, using the area this spring and summer.

White Pelicans on Talcot Lake.--About 100 white pelicans were observed this spring on the Talcot Migratory Waterfowl Refuge, Minn., for the first time in several years. Because of the more favorable water conditions on the refuge, a larger number of migrating waterfowl were found there this spring than in previous years.

Swans on Upper Mississippi Refuge.--A flock of 67 whistling swans rested and fed on the Upper Mississippi Refuge for about 2 weeks, according to Superintendent Ray Steele. One bird remained until May 13, which probably is an all-time late spring record for southern Minnesota. April 19 is the latest record for southern Minnesota quoted in Dr. Thomas S. Roberts' "The Birds of Minnesota."

Geese Hatched Under Hens at Lake Bowdoin.--Last year two Canada geese were raised from deserted eggs picked up along the lake shore and placed under a setting hen. One goose still makes its home at the refuge headquarters, Refuge Manager B. M. Hazeltine of the Lake Bowdoin Refuge, Mont., reports. Several eggs were obtained this spring from nests on the refuge and hatched under chicken hens. These birds will be transferred to the Medicine Lake Refuge in an effort to induce wild geese to nest on that area. When the goslings were turned out with their foster mother, the goose raised last year immediately took over the job of raising them. The sight of this old bird with seven young ones almost tame enough to feed from the hand attracts considerable attention from visitors at the refuge, Mr. Hazeltine states.

Many Birds Stop at Squaw Creek During Migration.--Refuge Manager Percy L. DePuy, of the Squaw Creek Migratory Waterfowl Refuge, Mo., states that at least 250,000 ducks and 50,000 blue and snow geese were on the refuge, during the height of the spring migration. Canada geese came later, between 500 and 1,000 being present in April.

Eared Grebes Nest at Lake Bowdoin.--While a few eared grebes have nested in the main lake area of the Lake Bowdoin Refuge, Mont., for several years, no large colonies were observed until this season when 662 nests were counted in the newly-flooded Dry Lake area by Refuge Manager Benjamin M. Hazeltine. The colony was established in about 2 feet of water in an area that had grown up to weeds during the years the lake was dry. Many coots also nested here.

Refuge Plantings Attract Birds.--Plantings of trees and shrubs about the headquarters at the Fort Niobrara Game Preserve, Neb., are already showing favorable results in attracting large numbers of song birds for nesting, according to Refuge Manager Geno A. Amundson.



A pair of robins used a cedar tree for their first nest and a cottonwood for the second, while orchard orioles nested in a weeping mulberry tree within 45 feet of the back door of the manager's residence. A pair of Say's phoebes have raised two broods. Other species nesting at the headquarters were: Bullock's oriole, lark sparrow, blue grosbeak, brown thrasher, Eastern kingbird, Arkansas kingbird, western meadowlark, dickcissel, warbling vireo, and chipping sparrow. During the heat of the day night hawks roost in the dead branches of a large cottonwood tree. A mockingbird was noticed on the refuge this summer, and a cardinal was seen a few miles east of the area, the first record for this bird in the locality.

Longhorn Herd Growing.--On May 31 Mr. Amundson reported finding a new-born calf in the longhorn herd on the Niobrara Game Preserve. All four cows in the herd had calves this spring, bringing the total number of births on the preserve in the last 3 years to 12 and the number of animals in the herd to 22.

Uses Plane for Refuge Work.--Manager E. R. Sans, of the Charles Sheldon Antelope Refuge, Nev., finds many uses for his aeroplane. He recently was able to spot accurately boundary monuments along the Oregon-Nevada State line. An open headgate on Catnip reservoir was noted and, as a result, it was closed before there was any great loss of water. On May 26 the plane was used to locate a CCC enrollee who had become lost the previous day.

Adobe Bricks Used for Refuge Buildings.--Adobe bricks are being used in the construction of all buildings on the Bitter Lakes Refuge, N. Mex. These bricks, which are made of local materials by CCC and WPA labor, are commonly used in the region and will also be used in construction work at the Bosque del Apache Refuge, N. Mex., and the Kofa and Cabeza Prieta Game Ranges, Ariz. Buildings made of these bricks have walls that average 16 inches thick and, as a result, are cool in summer and warm in winter.

Gadwall Ducklings Seen on Pea Island.--A gadwall with 10 ducklings was seen on June 12 on the Pea Island Migratory Waterfowl Refuge, N. C., by Refuge Manager S. A. Walker. This is the first time since he has been stationed on the refuge that he has seen the young of this species on the area.

Audubon President Visits Pea Island.--Dr. T. Gilbert Pearson, president emeritus of the National Association of Audubon Societies, and H. H. Brimley, of the North Carolina State Museum, recently spent almost 2 days on the Pea Island Refuge, gathering data for Dr. Pearson's new edition of "Birds of North Carolina." While there they visited the nesting colonies of laughing gulls, black skimmers, and common, least, gull-billed, and royal terns.

Heavy Rains Help Arrowwood.--The vegetation on the Arrowwood Migratory Waterfowl Refuge, N. Dak., is in excellent condition as the result of recent heavy rains, Refuge Manager Lynn A. Griner advises.

During the first 3 weeks of June there had been about 5 inches of rain. The lakes and potholes on the refuge are full or nearly so, and Mr. Griner thinks most of them will have water throughout the entire summer.

European Wigeon Seen on Des Lacs.--Refuge Manager Seth H. Low reports seeing a European wigeon on the Des Lacs Refuge, N. Dak., on June 19. On June 22, approximately 20,200 ducks were recorded in an all-day inventory of the ducks on the refuge.

Ducklings Stuck in Oiled Road.--Lloyd Faust, an NYA observer stationed at the Long Lake Migratory Waterfowl Refuge, N. Dak., submits the following: "They are oiling the highway from Sterling to Hazelton. My dad is working on the gravel outfit below Moffit, and he rides back and forth with the truck drivers. One day after they had just oiled the road, dad was coming home when he saw an old pintail along the road by the lake. She was fluttering and playing hurt. They stopped the truck and found six little ducklings stuck on their backs in the oil. They had just been hatched and their down stuck to the road. The men picked them up and put them in the water at the edge of the lake."

Ducks on Lower Souris Increase.--Some 67,000 ducks were estimated to be on the Lower Souris Migratory Waterfowl Refuge, N. Dak., during the latter part of May, according to C. J. Henry, refuge manager. This is more than twice the number on the refuge in May 1938, when 26,000 were counted in the inventory. Redheads and canvasbacks showed outstanding gains, Mr. Henry reports.

New Bird Records for Lower Souris Refuge.--The following birds were seen on the Lower Souris Refuge during the last fiscal year for the first time since the establishment of the sanctuary: Raven, surf scoter, white-winged scoter, red-shafted flicker, European wigeon, red-headed woodpecker, and dickcissel. A total of 225 species of birds has now been recorded on the refuge. A few pairs of the dickcissels nested on the refuge, raising the known number of nesting species to 113.

Sullys Hill Popular With Visitors.--A total of 1,021 persons in 217 automobiles visited the Sullys Hill Game Preserve, N. Dak., on May 29, according to Refuge Manager Wesley D. Parker. On Memorial Day 437 persons availed themselves of the picnic facilities. During the last fiscal year 22,383 persons visited the refuge.

Grass and Herds Grow.--Plentiful rains received during June have greatly improved conditions on the Sullys Hill Preserve, Mr. Parker reports. The grass, which was beginning to dry up at the end of May, once again is green, and the prospect for a good crop on the area this year is good. Two buffalo and eight elk calves born during the month increased the buffalo herd to 22 and the elk herd to 31.

Large Big-game Increases Reported.--One hundred and two buffalo calves were born this year on the Wichita Mountains Wildlife Refuge, Okla., according to information from Superintendent George E. Mushbach. This is the largest buffalo calf crop in the history of the refuge. Two calves were born deformed and were destroyed, and three were found dead in June. The net gain of 97 for the year increased the herd to 421. All the animals are in excellent condition, Mr. Mushbach says. The antelope herd was increased by 7, making the total of this herd 15. Forty-five longhorn calves were born, raising the number of longhorns to 167.

Wichita Refuge Praised in New Magazine.--The Wichita Refuge was featured in the June issue of a new magazine, "Outdoor Oklahoma", which had a front cover showing buffaloes grazing on the refuge and included two articles on the sanctuary. An illustrated article by Bill Beakley, entitled "Longhorns in the Wichitas," tells of the herds of longhorn cattle and buffaloes on the refuge. "The Wichitas," an article by Mildred Sandoz, deals principally with the beauty of the area.

Sage Grouse Flocks Increase on Hart Mountain.--Fourteen broods of young sage grouse were noted in the immediate vicinity of the headquarters on the Hart Mountain Antelope Refuge, Oreg., on May 29. All indications point to a heavy hatch and a good survival of chicks over the entire area, says Jean F. Branson, refuge manager. He also reports seeing antelope fawns on every patrol. No evidence of sickness or loss has been noted. While only .85 of an inch of precipitation was received from March 13 to the end of May, forage conditions were better on the refuge than on the surrounding areas.

Redheads Outnumber Other Ducks on Malheur Lake.--On May 22 George Benson counted 42 broods of Canada geese on Boca Lake in the Blitzen Valley of the Malheur Refuge, Oreg. Two days later during a trip to Malheur Lake, Mr. Benson noted that redheads were more numerous than any other duck on the refuge. The lake has an abundant growth of sago pondweed.

Pelicans Use Abandoned Hay Stack.--When the Malheur Lake bed was dry and used for farming, haystacks often dotted the terrain. These stacks were not removed when the lake was flooded, and the tops of some of them can still be seen protruding above the water. On one old haystack, about 10 yards wide and 30 yards long, that remained in the middle of the lake, Richard M. Tullar recently found 178 white pelican nests and about 12 Farallon cormorant nests.

Notables Visit Malheur.--Several of Oregon's officialdom visited the Malheur Refuge on May 3. Included in the inspection party was Governor Sprague, Secretary of State Snell, State Treasurer Pearson, Purchasing Officer Grimes, Secretary of the State Land Board Griffith, President of the Senate Duncan, Dr. L. E. Hibbard, of Burns, an associated Press writer, and an Oregonian news reporter. The party



was shown about headquarters. The return trip to Burns was made via the 10-1/2-mile Cole Island dike built by the CCC camp.

Gull-billed Tern Nesting on Cape Romain.--Four nests of the comparatively rare gull-billed tern were found on June 6 on Cape Island of the Cape Romain Refuge, S. C., by William Baldwin, Jr.

Sand Lake Water Conditions Good.--Refuge Manager Watson E. Beed, of the Sand Lake Migratory Waterfowl Refuge, S. Dak., reports that 6 inches of rain fell during the week of June 5 and brought the Mud Lake unit of the refuge to within eight-tenths of a foot of being full. This impounded area, most of which is excellent nesting march, covers about 5,000 acres. The Franklin's gull nesting colony on Mud Lake contains more than 20,000 nests this year, more than double the number there last season. Ruddy ducks and redheads show a substantial increase over previous years.

Botulism Mild at Bear River.--Fewer birds died of botulism on the Bear River Refuge, Utah, during the last fiscal year than in any previous year since the establishment of the refuge, according to Superintendent Vanez T. Wilson. During the year, 1,812 sick birds were gathered and treated at the hospital. Eleven hundred birds recovered and were released. In 1938, 6,350 birds were treated and 3,664 recovered. Mr. Wilson attributes this improvement principally to the improved water conditions on the refuge.

#### CONSTRUCTION AND C.C.C. OPERATIONS

Inspects New Jersey Camps.--On July 10 and 11, H. W. Terhune, with W. V. Taylor, of the Division of Wildlife Refuges, inspected Bombay Hook Camp BS-1, Del., and Tuckahoe Camp BS-1, N. J. A reconnaissance was also made of the proposed Brigantine Migratory Waterfowl Refuge, N. J., to which a CCC camp is to be assigned for development work.

Remodel Buildings at Fur Station.--E. P. McDermott visited the Fur Animal Experiment Station at Saratoga Springs, N. Y. on July 13 to inspect and supervise the remodeling of the residence building, utility building, and carpenter shop, and to determine the probable cause of the failure of a well at the station.

Open New Camp in Maine.--On July 13, O. W. Teckemeyer went to the Army General Depot at Columbus, Ohio, to inspect pile-driving units that are available for CCC use. On July 20, Mr. Teckemeyer left Washington to inspect the CCC camps and equipment in Region 8 and to assist in the establishment of the new camp at the Moosehorn Migratory Waterfowl Refuge, Calais, Maine. Regional Director Barry Locke accompanied him to the Moosehorn area on July 26.

Des Lacs Camp Continued.--Approval has been received for the continuation of the Des Lacs Camp, BS-2, N. Dak., for the remainder of the current fiscal year. This camp was scheduled to be discontinued on October 1, 1939, but the camp was retained because of the need of continuing work on water impoundments, principally to strengthen and reinforce existing dykes.

Goes to New Post.--Harry W. Lundeen, newly appointed CCC inspector, was in the Washington office on assignment for a short time during July. He made an inspection of the CCC camps in Region 7 and on July 24 left for Camp BS-4, Lower Souris, N. Dak., where he will confer with the camp superintendent before leaving for his new official station at Albuquerque, N. Mex.

Change Inspection District, Appoint Inspectors.--Because of changes in CCC camp locations it was necessary to redefine the districts assigned to Bureau CCC inspectors. These changes are as follows:

E. H. Hackenberg, who formerly supervised CCC activities in Regions 3 and 5, with headquarters at New Orleans, La., has been transferred to the regional office in Portland, Oreg., and has been assigned an inspection district that includes the Bear River camp, Utah, and all camps in Region 1 except the side camp at Boulder Canyon.

John J. Hedrick, who has been in charge of CCC Camp BS-1, St. Marks, Fla., since May 5, 1936, was appointed CCC inspector (associate civil engineer) on June 26. He has been assigned the inspection of Camps BS-1, White River, Ark.; BS-1, Sabine, La.; BS-1, Aransas, Tex.; and BS-2, Swan Lake, Mo. The new camp to be established at the Wheeler Migratory Waterfowl Refuge, Ala., will likewise be assigned to him. Mr. Hedrick maintains his headquarters in the regional office in New Orleans, La.

Harry W. Lundeen, who was appointed CCC inspector (associate civil engineer) on June 27, has been assigned the inspection of Camps BS-1, Wichita Mts., Okla.; BS-1, Bitter Lake, N. Mex.; and the side camp at the Boulder Canyon Migratory Waterfowl Refuge, Nev. He will supervise the new camp to be established at the Bosque del Apache Refuge in Socorro County, N. Mex. He will be stationed at Albuquerque, N. Mex., on August 15, and will make his inspections from that point.

Wilfred J. Greyson, CCC inspector (associate engineer), has been transferred from Portland Oreg., to Atlanta, Ga., and will supervise all Bureau CCC activities in Region 7.

Walter E. Vroom, CCC inspector (associate civil engineer), has been transferred from Boston, Mass. to Milwaukee, Wis., from which point he will make inspections of Medicine Lake Camp BS-2, Mont., and all Bureau camps in Regions 4, 6, and 9, except Swan Lake Camp BS-2, Mo.

Camps in Region 8 will be inspected by Division officials from the Washington office.

Personnel.--Millard I. Frost, CCC camp inspector in Region 7 since February 1, 1935, accepted a position with the U. S. Housing Authority on June 25. Mr. Frost will be stationed in Rome, Ga.

Tours Mid-west.--P. S. Munk Pedersen left Washington on July 16 to inspect and formulate a work program for the Necedah Migratory Waterfowl Refuge, Wis., on which a camp is scheduled to be established on October 1. He also conferred with Bureau CCC officials at Camp BS-1, Seney, Mich.; Camp BS-3, Rice Lake, Minn.; and Camp BS-2, Swan Lake, Mo. Enroute, he visited the regional offices at Milwaukee, Wis., and Des Moines, Iowa. Mr. Pedersen returned to the Washington office on July 28.

Boys Trained in Classes, on Job.--The program of refuge development with CCC help involves a diversity of projects and provides many opportunities for enrollees to learn the fundamentals of a skilled trade, according to Mr. Terhune. Construction of roads, dams, and bridges, and erection of small buildings and other structural improvements necessary for the efficient and economical management of a refuge require workers who have a knowledge of carpentry, concrete work, and equipment operations. Classes in these subjects were among the most popular of the many courses available to enrollees in Biological Survey camps.

During the last quarter of the past fiscal year classes in 76 subjects were held after working hours to supplement on-the-job instructions. Many of the enrollees studied unrelated subjects so that they might be better prepared to decide what craft they would like to follow after leaving the CCC.

Some 270 Biological Survey camp employees gave instructions in on-the-job training courses, and about 250 employees gave classroom instruction after working hours. During the year 211,258 hours, or an average of 6,154 hours a camp, were devoted to classroom instruction. Records show that 395 enrollees obtained private employment last year largely because they received instruction in the classrooms and on the work projects.

Establish Fire Safety Record.--The CCC accident-prevention program last year was an effective one despite one fatal accident, according to reports. A total of 1,061,932 man days were devoted to project work by CCC enrollees attached to Biological Survey camps, and during this period only 143 lost-time accidents occurred. During a comparable working period in the previous fiscal year there were 200 lost-time accidents. Tule Lake Camp BS-3, Calif., and Charles Sheldon Camp BS-2, Nev., had no accidents during the year. Five camps recorded only one accident.

The fatal accident occurred at White River, Ark., on June 8, 1939. An enrollee was working with a crew repairing a telephone line. Instead of walking around a slough over which the telephone line passed, as he had been instructed to do, he attempted to swim across. Heavy tools which were attached to his clothing caused him to sink and drown. The Division is resolved more than ever to take every possible precaution against accidents and to reestablish its fine record in the prevention of accidents, Mr. Terhune says.



The appointment of Ambrose C. Martinsen as superintendent of the new CCC Camp BS-1, Calais, Maine, became effective on June 25. Before his transfer to the Moosehorn camp Mr. Martinsen was in charge of a Forest Service camp at Ely, Minn.

Mrs. Roxie L. Monson was appointed junior clerk-stenographer and reported for duty in the Washington office on May 29.

Arthur F. Miller, associate civil engineer, who since July 18, 1935, has served as CCC inspector in Regions 9 and 4 was transferred to the Division of Wildlife Refuges in an engineering capacity on June 30.

#### GAME MANAGEMENT

Attend California Meetings.--Mr. Crouch and F. P. Callaghan attended the sessions of the International Association of Game, Fish, and Conservation Commissioners at San Francisco, Calif., June 26-30. An address on "Enforcement of Federal Regulations" was given by Mr. Crouch at the closed meeting with State and Federal officials. He also addressed the game management agents from Region 1 at their meeting with the regional director on June 25 and 26, and the regional directors in general session on June 28.

Addresses Game Wardens.--Chester A. Leichhardt addressed the Virginia State Game Wardens during their annual conference held on June 29 at the Virginia Polytechnic Institute at Blacksburg.

Interesting Animals Imported.--Among the more interesting birds and mammals imported recently were: From the Orient, 3 tiger doves (*Turtur tigrinus*), 3 Java jungle fowl (*Gallus bankiva*), 2 six-plumed birds of paradise (*Parotia sefilata*), 2 pied hornbills (*Anthracoceros coronatus*), and 3 concave-crested hornbills (*Rhytidoceros Plicatus*); from Hong Kong, China, 1 giant panda (*Ailuropoda melanoleucus*); and from India and the Malay Peninsula, 6 sun bears (*Helarctos malayanus*).

Baiting Doves Costly.--Four persons charged with hunting and killing mourning doves by aid of feed were pronounced guilty by Judge Miller in the United States District Court at Louisville, Ky., on July 8. Each defendant was fined \$20 and costs of \$15.20.

Ten Pay \$1,311.--Ten residents of Fort Worth, Tex., nine of whom possessed waterfowl in excess of the limit, and one who possessed waterfowl in close season were arraigned in State court and paid fines and costs totaling \$1,311. Eight of the defendants were fined \$100 each, and two \$200 each. The evidence was obtained by State wardens and Federal agents.

Personnel.--Samuel Robinson transferred to this Division from the Bureau of Customs, Department of the Treasury on June 21. He is assisting Judge Williams in the Section of Importations and Permits.

Mrs. Elizabeth DeMik transferred on June 27 from the Veterans Administration to the Section of Game Agents to fill a position as junior-stenographer.

#### PREDATOR AND RODENT CONTROL

Assistant Chief Appointed.--On June 1, W. E. Riter was transferred from Denver, Colo., to Washington, D. C., to the position of Assistant Chief, Division of Predator and Rodent Control. Mr. Riter assumes his post after long experience in the field. He first served as junior district agent in the Idaho and Colorado districts. Several years ago he was appointed district agent in the Colorado District, from which duties he was transferred to Washington.

Revise Field-mouse Film.--Donald A. Spencer was in Washington during the latter part of June working on a revision of the field-mouse motion picture. When completed the film will include one reel portraying the habits and ecological features of various species of field mice and another dealing with methods of control.

Drought Increases Jack Rabbit Damage.--Because of the extremely dry weather prevailing in Southern Idaho during the past 3 months, range vegetation, which normally is the source of sustenance for jack rabbits in the area, has dried up. This condition, according to District Agent George E. Holman, has forced the rabbits to move in on ranches, where the animals have inflicted heavy depredations to crops. This is an interesting observation relative to the effect of drought conditions on the movements of jack rabbits, and depicts the devastation that can be wrought through such migrations, says Mr. Holman.

Coyotes Reported in New Jersey.--An investigation was made this month of predator activities in Hunterdon County, N. J., where one farmer lost 500 chickens. The depredations were alleged to have been committed by half-breed dogs and coyotes. Six of the marauding animals have been killed. One was identified at the Rockefeller Institute, Princeton, N. J., as a female coyote. So far as known, this is the first reported case of a coyote in New Jersey.

Personnel.--Frank N. Jarvis, senior biological aide, employed in the Washington office returned to duty June 12 after being ill for more than 5 weeks. He resumes active duty in rodent-control work in the Washington, Virginia, and Maryland area.

Walter W. Dykstra transferred his official headquarters from Worcester, Mass., to Amherst, Mass., on June 24.

Robert Isaac transferred from New Haven, Conn., to Malta, Mont., on June 26. He will assume duties as agent under R. E. Bateman's direction.

Howard A. Merrill was appointed as agent on June 24 with headquarters at Storrs, Conn., to fill the vacancy created by Mr. Isaac's transfer.

The following junior district agents recently received probationary appointments: Virginius L. Johnson, Salt Lake City, Utah; Edward J. Barker, Lubbock, Tex.; John Hamlet, Portland, Maine; Walter W. Dykstra, Amherst, Mass.; and Weldon B. Robinson, Ithaca, N.Y.

Arthur K. Crews was transferred on June 25, from Roseburg, Oreg., to Phoenix, Ariz., as junior district agent under E. M. Mercer's direction.

William F. Fair, control-methods research field investigator, on June 20 was transferred to Las Cruces, N. Mex., from Portland, Oreg., to study the jack rabbit control problem in New Mexico.

Robert A. Rowe was transferred on June 26 from Parker, S. Dak., to Portland Oreg., as junior district agent under Roy Fugate's direction.

David I. Wood was transferred from the Alaska Game Commission to the Biological Survey on June 26. He will be in charge of the Supply Depot and Laboratory at Pocatello.

Paul T. Quick was transferred on June 26, from the Supply Depot and Laboratory at Pocatello to Denver, Colo., to assume charge as district agent, of the Colorado predator and rodent control work.

On June 16 Jack F. Welch was transferred from Denver, Colo., to Pocatello, Idaho, to act as technical assistant to Mr. Wood at the Supply Depot and Laboratory. Mr. Welch will be employed half time as technical assistant at the laboratory and half time as a field investigator with the Control Methods Research project under F. E. Garlough. Mr. Welch will have technical supervision of the production of rodent baits, predatory animal tablets, gas cartridges, and other items processed at the Pocatello plant.





# THE SURVEY

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## GENERAL NOTES

First Regional Conference Held.—A conference of personnel in Region 8 was held in Boston, Mass., on August 21 and 22, the first region-wide conference to be held by Biological Survey personnel. Both general and group sessions considered all phases of the Bureau's work, and State cooperators took part in some discussions. Regional Director Locke expressed satisfaction at the results of the conference and the belief that the experience would be of benefit in organizing future meetings, both in Region 8 and in other regions. Washington personnel participating included W. E. Crouch, W. E. Riter, William T. Krummes, Richard Griffith, and Howard Zahniser.

Conservation Bulletin Series Authorized.—By Order No. 1410 of August 8, the Acting Secretary of the Interior approved the issuance by the Department of a new series of publications to be known as Conservation Bulletins. They will be numbered serially and will be initiated by the various Bureaus. The definition adopted for the series is as follows:

"The Conservation Bulletins shall contain terse educational and directive information and other pertinent statements regarding subjects of broad interest coming properly within the range of the Department in the conservation of the Nation's natural resources. They will be concise, usually not exceeding 16 to 32 pages, and usually will contain pictures adequately illustrating conditions and methods discussed. They will state facts and present recommendations in nontechnical style. Designed to influence individual attitudes toward our natural resources and to improve individual and community practices in their management, these bulletins will offer recommendations and directions regarding the conservation and use of the resources."

This definition closely followed the recommendation on the subject by this Bureau. The series, first suggested by William H. Cheesman, Biological Survey editor, will be a continuation so far as the Survey is concerned of its contributions to the Farmers' Bulletin series for the last 42 years. Arrangements have been made for having this Bureau initiate the series with Conservation Bulletin No. 1, under the title "Attracting Birds," by W. L. McAtee.

President Approves 45-Day Season for Duck Hunters.—Secretary Ickes on August 15 announced the Migratory Bird Treaty Act regulations for 1939, including a 45-day duck-hunting season for the second consecutive year. The amended regulations had been approved by President Roosevelt. There were two outstanding changes: The season in the intermediate zone will

open on October 22 instead of October 15, and the daily bag limit on geese has been reduced from 5 to 4. The regulations were also modified to permit taking of migratory waterfowl by means of bow and arrow.

In the northern zone, the season on ducks, geese, Wilson's snipes, or jacksnipes, and coots opens October 1 and closes November 14. In the intermediate zone the season is October 22 to December 5, and in the southern zone, November 15 to December 29.

There is no open season on snow geese and brants in Florida and States north thereof that border on the Atlantic coast. Closed seasons throughout the United States and Alaska are continued on Ross' geese, wood ducks, and swans.

Outstanding change in the regulations governing the hunting of migratory birds other than waterfowl was a postponement of the opening of the mourning dove season in some States. In Arkansas and parts of the southern States the mourning dove season will open on September 15 instead of September 1. Many young doves are still in the nest on September 1, and the opening-date change will help protect these nestlings.

#### ADMINISTRATION

Memoranda to Field Offices Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (AFO) series since the last issue (June) of The Survey.

- No. 221. Amendment No. 6. Additional information required to be furnished on Form Bi-1481a (Narrative Report of Lost-Time Accident). (July 24.)
- No. 268. Amendment No. 1. New provisions of law applying to mail sent under frank; quarterly reports on weight of mail matter transmitted. (August 5.)
- No. 272. Stationery. (July 17.)
- No. 273. Cooperation between the Departments of the Interior and Agriculture. (July 20.)
- No. 274. Leave of absence to members of veterans' organizations to attend conventions. (July 31.)
- No. 275. Questionnaires and circular letters. (August 3.)
- No. 276. Motor-vehicle accidents. (August 3.)
- No. 277. Distribution of Department clip sheet to field offices. (August 24.)

The following memoranda to field officers have been issued in the "Contracts" series:

- No. 89. Supplement No. 1. Contract for service-station deliveries of gasoline, lubricating oil, and lubrication service in the Northeastern States for the period July 1 to September 30, 1939, inclusive. (See note page 2.) (July 17.)
- No. 89. Supplement No. 2. Contracts for service-station deliveries of gasoline and lubricating oil for the period July 1, 1939, to June 30, 1940, inclusive. (July 18.)



- No. 89. Amendment No. 1. Open market purchases of service-station deliveries of gasoline and lubricating oil. (July 19.)
- No. 91. Changes in Procurement Division Contracts. (July 17.)
- No. 92. Supersedes No. 35 and Supplements Nos. 1, 2, and 3 thereto.  
Mandatory contracts for the procurement of exploders, dynamite, blasting plugs, blasting powder "B" and special nonsensitive-type blasting powder, and primer or booster charge for nonsensitive powder; and administratively mandatory contracts for galvanometers, blasting machines, and rheostats; for the period July 1 to December 31, 1939. (Class 4, Supplement No. 1.) (July 15.)
- No. 93. Supersedes No. 36, dated July 26, 1938. Procurement of lubricating oil requirements (one gallon or more) under Navy Department contracts during the fiscal year 1940. (July 26.)

The following memoranda to field officers have been issued in the new "Boat Maintenance Memoranda" series:

- No. 7. Boat terms. (July 7.)
- No. 8. Anchors, anchor lines, and deck lines. (July 15.)
- No. 9. Time, speed and propeller slip. (July 25.)
- No. 10. Care of the battery. (July 27.)
- No. 11. Operating the motorboat. (August 2.)
- No. 12. Instructions for executing semi-annual report on Government-owned motorboats. (August 14.)
- No. 13. Reports on Government-owned floating equipment. (August 25.)

#### PUBLIC RELATIONS

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Rabbit-pen construction in relation to sore hocks. By George S. Templeton, Director, United States Rabbit Experiment Station, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-139, 2 pp. June 1939. Received August 15.
- Protecting blueberries from damage by herring gulls. By Robert C. McClanahan, Assistant Biologist, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-141, 4 pp. August 1939. Received August 24.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

- Cottam, C., and Nelson, A. L. (with T. E. Clarke, junior author). Some notes on the early winter food habits of the black bear in the George Washington National Forest. Jour. Mammal. 20: 310-314. Aug. 1939.
- Couch, L. K. Review of cooperative wildlife management research. Amer. Wildlife 28 (4): 172-177, illus. July/Aug. 1939.
- Fugate, R. Swift fox den located. Murrelet 20: 44. May/Aug. 1939.

- Gerow, J. California gulls banded. Murrelet 20: 43. May/Aug. 1939.
- Bald eagle kills black brant. Murrelet 20: 44. May/Aug. 1939.
- Goldman, E. A. A new badger from Sonora. Jour. Washington Acad. Sci. 29: 300-301. July 15, 1939.
- Nine new mammals from islands in Great Salt Lake, Utah. Jour. Mammal. 20: 351-357. Aug. 14, 1939.
- Howell, A. H. Descriptions of five new mammals from Florida. Jour. Mammal. 20: 363-365. Aug. 14, 1939.
- (Review of) bats, by Glover Morrell Allen. Jour. Mammal. 20: 338. Aug. 14, 1939.
- (Review of) The recent mammals of Idaho, by William B. Davis. Jour. Mammal. 20: 389-390. Aug. 14, 1939.
- Inler, R. H. A comparison of the food of white-necked ravens and crows in Oklahoma. Wilson Bull. 51: 121-122. June 1939.
- Jewett, S. G. A Pacific kittiwake comes inland. Condor 41: 170. July 15, 1939.
- Martin, A. C. (with E. L. Baumgartner, junior author). Plant histology as an aid in squirrel food-habits studies. Jour. Wildlife Mgmt. 3: 266-268, illus. July 1939.
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Press and Radio Information and Addresses, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Prepare for rat war, farmers are advised. Press statement P. N. 71238. Released Aug. 7.
- President approves 45-day season for duck hunters. Press statement P. N. 72123. Released August 15.
- Hunters urged to buy "duck" stamps early. Press statement P. N. 73659. Released August 26.
- 6 million big-game animals in country. Press statement P. N. 73658. Released August 27.
- Trumpeter swan inventory reports 200 birds in United States. Press statement P. N. 75892. Released August 30.

## WILDLIFE RESEARCH

Wildlife Surveys

Rabbits Damage Firs.--In many areas in the Pacific Northwest replacement of the desired Douglas Fir is severely handicapped by cropping by rabbits, according to a report from A. W. Moore. Field investigations showed some years ago that Port Orford cedar, a valuable timber species, was not molested by these animals. For this reason the progress of a number of plantings has been followed.

A 1932 plantation of this so-called cedar was made by a lumber company at an elevation of 2,000 feet near Ryderwood, Wash., and on the east slope of the Coast Range. The seed source was from an elevation of 3,000 feet near Powers, Oreg., and on the west slope of the Coast Range. In 1937 it was noted that the young trees in the plantation were producing seed. Observations made last July showed that this plantation is reproducing itself, 1- and 2-year-old seedlings being present.

Stumpage prices given in Agricultural Statistics show that in 1936 Port Orford Cedar was valued at \$8.50 per thousand compared to ninety-five cents for Douglas Fir. Port Orford apparently grows as fast as, if not faster than, Douglas fir in the plantings where it is being kept under observation. In ornamental nurseries this tree is called the Lawson cypress.

Willamette Valley Unsuitable for Quails.--From a study of quails in Willamette Valley, Oreg., it is believed that the bobwhite now a resident in this region is unsuited to the climate, says Arthur S. Einarsen, leader of the Oregon Cooperative Wildlife Research Unit. The quail are Colinus virginianus texanus believed to be imported from Mexico, hence originally adapted to conditions quite different from those in Willamette Valley.

It is hoped that in an experimental way a small number of birds from the northeastern States can be introduced for study. Climatically much of the Willamette Valley seems equally as well suited to bobwhites as some of the most productive areas in the East, Mr. Einarsen states.

Island Experiment Progresses.--A good hatch of Chinese pheasants on Protection Island, Wash., was reported during June by Hugh Ross Newcomb, graduate student in charge of the project, which is being conducted by the Oregon Cooperative Wildlife Research Unit. One of his cooperators reported seeing a brood of valley quails from the liberations made last winter.

Ruffed grouse and sooty grouse stock has been procured for liberation on the island and was released this month. Since these are native forms that are at a low ebb, a controlled experiment that will measure their responsiveness is of especial interest, says Doctor Jackson.



Shrews Like Tree Seeds.--Shrews, though classed as insectivores, like to eat tree seeds. That's the conclusion reached by A. W. Moore, who recently conducted studies on logged-over land along the Oregon coast and found that live traps baited with Douglas fir seed were attractive to large numbers of shrews.

Screening of seeded spots with half-inch mesh wire through which shrews but not mice could pass showed the long-nosed mammals to be as responsible for the retardation of natural forest regeneration as are mice, Mr. Moore asserted. Spots screened with one-third-inch mesh wire had good stands, while the unprotected spots, or controls, yielded no seedlings.

Follow-up Investigation of Beaver Transplanting.--More than a thousand beavers have been transplanted in mountain streams in the northwest States by Federal agencies during the past several years. Dr. Victor B. Scheffer, assistant biologist, spent July 18 to July 27 looking at beaver plantings in northeastern Oregon "not so much to check on success or failure of plantings as to pick out those plantings where it was practicable to get quantitative data".

The object of the work is to study the behavior of these transplanted animals. Information is being assembled on (1) the amount of work done by transplanted colonies in the form of tree cutting, pond building, etc., and (2) the reasons for the failure of certain transplanted colonies. It is believed that this information will enable wildlife managers to transplant beavers more efficiently and economically in the future.

Starting with a known number of beavers operating over a known length of time in an area previously unpopulated, estimations of the numbers of dams and lodges constructed and the number of trees cut were made, Dr. Scheffer said. Results as yet have not been reported.

Investigate Bison Bone Deposit.--A deposit of buffalo bones, 9 to 10 feet thick, lying in a bluff bordering the south side of the Grand River, near Lemmon, S. Dak., was investigated by Olaus J. Murie, assisted by sons Martin and Donald. Messrs. Murie studied the deposit, which was called to the Bureau's attention by Congressman Francis H. Case, for 3 days. A preliminary survey indicates that the bones are of the recent bison, but more detailed studies are necessary before positive identification of the specimens can be made. Masses of hair and hide, as well as stomach contents, were preserved in the deposit, Mr. Murie said, and more careful investigation is planned in expectation that it will reveal interesting and valuable data on the life history of the species.

Report on Does and Doves.--Does in LaSalle County, Tex., during July preferred the large flats of cordgrass (Spartina sp.) locally known as sacahuista, according to a report received by Dr. Walter P. Taylor, leader of the Texas Cooperative Wildlife Research Unit, from Bernard E. Ludeman, a student assistant. Apparently cordgrass, and the occasional huisache and mesquite mottes, offer concealment for fawns and yet allow a clear vision to the adult deer. The first fawn was seen July 3. Ranchers say there are a great many old dry does this year.

Less than 15 pairs of whitewing doves were seen during July, although reports show them to have been numerous in this region about 20 years ago.

Restoring Beaver in Texas.--Seventeen beavers were trapped in Kimble and Edward Counties, Tex., in July by Graduate Student Arthur H. Cook, who released the animals in four other counties, according to Dr. Taylor. This is part of the beaver-restoration work being conducted in Texas. One young of the year died while in captivity, and an adult male (32 pounds) died after being exposed to the sun 1-1/2 hours. The remaining 15 animals were liberated as follows: Leon County, Sandy Branch (3) and Mill Creek (3); Robertson County, Cedar Creek (2); Newton County, Rocky Creek (3); and Jasper County, Lewis Creek (4).

One beaver, taken on the South Llano, was infected with screw worms. The worms were killed, and the animal apparently recovered while in captivity. Another beaver taken at the same place had deep cuts but no worms. Two beavers infected with screw worms were found on the C. W. Henderson ranch where a high concentration of the animals was reported and four captured. Another infected beaver and one with cuts were found at Mr. Price's camp where 11 beavers were seen during the recent flood. The cuts may be caused from fighting due to overconcentrated populations.

Survey Matanuska Valley.--About 2,500 square miles in the Matanuska Valley have been divided into 15 range units that will be studied in a land-use survey conducted cooperatively by the Biological Survey, the Soil Conservation Service, Bureau of Agricultural Economics, Agricultural Experiment Station, Alaska Land Planning Council, and the Bureau of Fisheries. The wildlife survey will be made by L. J. Palmer, principal biologist, with the assistance of CCC personnel furnished by the Forest Service. The project began in July when three CCC crews of two men each were trained for the work. A fourth crew was assigned to the survey this month.

Object of the study is "to determine the wildlife occupation of Matanuska Valley and the range grazing potentialities in relation to colony settlement and farming development as a contributing basis for planning the best use of the land that will safeguard as much as possible a continued wildlife maintenance."

Visit Mammal Laboratory.--The following visited the mammal laboratory during July and August:

Dr. and Mrs. A. F. Carr, Jr., of Gainesville, Fla., conferred with A. H. Howell on July 20.

Elbert L. Little, Jr., of the Southwestern Forest and Range Experiment Station, Tucson, Ariz., visited the laboratory on August 7.

On August 23 Oliver P. Pearson, Philadelphia (Pa.) Academy of Sciences, studied Oryzomys specimens, and Carl Lomen, Nome, Alaska, conferred with Major E. A. Goldman.

### Food Habits Research

Inspects Waterfowl Areas.--During June, C. C. Sperry inspected waterfowl areas near Hudson, Colo., and in the San Luis Valley and subsequently made recommendations for their development.

Bullsnake Traps Effective.--A Bullsnake trap with "drift fences," a development of the Food Habits Laboratory, Denver, Colo., has given encouraging results, Dr. Cottam says. Ralph Imler, who has been working on these traps, has made notable progress in perfecting their installation and use. By August, 158 bullsnakes had been trapped on the Crescent Lake Migratory Bird Refuge, Nebr., and 99 others were captured in other ways. Besides the information obtained on the relationship of bullsnakes to nesting ducks, Mr. Imler learned other facts concerning bullsnakes--their wanderings (through marked specimens), sex ratio, abundance at various periods, and feeding habits. The traps also served as means for appraising the abundance of other ground-traveling forms, including other snakes, frogs, toads, salamanders, and rodents of various species. The status of some of these creatures may have a bearing on the extent of snake depredations by their serving as buffers, a fact strongly indicated by the results of stomach examinations already made.

Mr. Imler also assisted in similar bullsnake control operations on the LaCreek Migratory Waterfowl Refuge, S. Dak.

Will Study Depredations of Fish-eaters.--At Pocatello, Idaho, E. R. Kalmbach, of the Denver Food Habits laboratory, interviewed individuals who complained of depredations of fish-eating birds (comorants, pelicans, great blue herons, and terns) on the back-water of the American Falls reservoir. As a result, steps have been taken to obtain stomachs of those species not protected by Federal or State law. This work will be conducted in cooperation with the U. S. game management agent at Boise and with the approval of the State officials.



Grape Growers Ask Help.--County agents and farmers in Nebraska conferred with Mr. Imler, during August on the problems of the grape growers in controlling bird depredations. Inspections were made to identify and estimate the damage done, and traps and various frightening devices were made for experimental use.

Refuge Nesting Studies Made.--Mr. Kalmbach recently completed an inspection of the various refuges on which nesting studies are being conducted. At Crescent Lake, Nebr., evidence indicated that about the same number of birds were nesting on the refuge as in 1938, although the relative abundance of the species had changed somewhat. Nesting success, however, may be even less than in 1938 due to increased predation by skunks and bullsnakes. (See p.190 "Skunks Blamed for Nesting Failures.")

At the Lower Souris Refuge, N. Dak., there was a pronounced increase in gull predation. Comparative tests are being made to disclose the possible effect of conspicuous markers as against inconspicuous markers used in locating nests.

More details of the life history of the trumpeter swans on the Red Rocks Lakes Refuge, Mont., will be made at a later date, Mr. Kalmbach said. It appears that the birds have fewer nesting hazards when they nest on the islands of the lakes, but the cygnets, once on shore, are exposed to attack by coyotes.

At the Malheur Refuge, Oreg., studies are being continued on the nesting success of ducks. There still remains the need for opening up certain of the more densely covered areas to benefit geese. Apparently the number of nesting geese has increased.

Botulism at Malheur.--At the Malheur Refuge there is real danger of an outbreak of botulism, Mr. Kalmbach says, because the total water area has been decreased by a limited run-off and excessive evaporation.

Study California Gulls.--Last May, Mr. Kalmbach visited the Bear River Migratory Bird Refuge, Utah, where waterfowl nesting studies were inaugurated for the season, according to a recent report. In addition to recording the customary data pertinent to such studies, special attention was given to the possible effect of the breeding California gulls that have greatly increased in numbers in recent years. In scope the studies were restricted to relatively small representative areas in this densely populated nesting grounds. Marcus C. Nelson, who assisted in earlier studies on the Bear River Refuge, was the field leader in this program.

During July Mr. Kalmbach visited the following refuges where nesting studies are being conducted: Crescent Lake, Nebr., Valentine Lakes, Nebr., Lower Souris, N. Dak., Lake Malheur, Oreg., and Bear River, Utah. At the Lower Souris limited personnel compelled a curtailment of this research but an excellent opportunity was afforded to appraise the effect of a dense crow population to an abundance of ducks. An increase in the water supply produced a duck nesting environment close to heavily wooded areas. The effect of the increased crow population probably will be disclosed in the results, Mr. Kalmbach states.

Skunks Blamed for Nesting Failure.--At the Bear River Refuge, Utah, attention was focused on the relationship of California gulls to nesting ducks and on the effect of human intrusion as a factor in nesting failure. The studies showed that a large population of skunks is living on this delta area, and nesting failure has often been clearly correlated with the presence of some nearby skunk den.

Marcus Nelson points out that either there has been an increase in the skunk population or predation of this kind has come more vividly to the attention of the observers. He correlated the presence of skunk dens with excessive egg loss and showed how their removal has put an end to such losses. Despite some manifestation of gull predation, Mr. Nelson feels that these birds are not an important factor in nest losses. Further study will be necessary, however, before a decisive statement regarding this can be made, Dr. Cottam says.

Ship Wild Geese Successfully.--Canada geese, timid and excitable as they are, may nevertheless be shipped long distances quite successfully provided certain requirements are met, according to Cecil S. Williams, of the Bear River Refuge. In July a nucleus breeding stock consisting of 28 to 52 birds was shipped by rail to each of the following Refuges: Necedah, Wisc., Mud Lake, Minn., Sand Lake, S. Dak., and Lower Souris, N. Dak. The geese sent to the Mud Lake Refuge were longest enroute, 77 hours. This is sufficient time, says Dr. Cottam, to cause considerable mortality if the birds are weakened by improper crates, excitement, or by high temperatures. These are the factors that must be eliminated to assure successful shipment.

A properly designed crate embodies principles for combating summer heat as well as for eliminating unsanitary conditions and unnecessary excitement. The important points in shipping wild geese may be summarized as follows: (1) Ship as soon as possible after they have been trapped and banded, (2) use crates of proper design, (3) use wet burlap to darken crates and lower their inside temperatures, and (4) release as soon as possible in an area where natural food and cover are plentiful.

### Distribution and Migration of Birds

Visits Minnesota Refuges.--F. C. Lincoln, in company with Superintendent Ray C. Steele, of the Upper Mississippi Wildlife and Fish Refuge, spent the week of August 20 in visiting refuges in Minnesota primarily to ascertain on which ones banding stations should be operated. Mr. Steele met Mr. Lincoln at Clinton, Iowa, and a day and a half was spent on the Upper Mississippi Refuge between that point and the headquarters at Winona, Minn. The Tamarac, Mud Lake, and Rice Lake refuges in Minnesota were also inspected, as was the State refuge at Thief Lake. A banding station is already in operation at Mud Lake, and similar activities are planned for the other areas.

Addresses Junior Chamber.--"Migratory Waterfowl" was the subject of an address delivered on August 25 by Mr. Lincoln at the State convention of the Minnesota Junior Chamber of Commerce in Minneapolis. Start-

ing with the conditions that prevailed about 1900 he traced the steady decline of the ducks and geese through overshooting, drainage, and other causes to the low point of 1934. The results of the Bureau's double-barreled program (regulation and restoration) was explained as the chief reason for doubling the population since that time. The population, however, must be doubled again to assure a reasonable number of birds, Mr. Lincoln explained. He concluded his remarks with an outline of what remains to be done to accomplish this objective.

Work of the Flyway Biologists.--L. J. Goldman, the Pacific Flyway Biologist, has completed his summer's work in Alaska and is returning to his headquarters at Berkeley, Calif. He reports a tremendous area of excellent waterfowl nesting grounds in the Yukon and in Kotzebue Sound, and, in general, improvement in the numerical status of the birds. Dr. G. B. Saunders, of the Central Flyway, is working in Alberta and Saskatchewan and has recently spent some time with representatives of Ducks Unlimited (Canada). Mississippi Flyway Biologist C. E. Gillham has returned to Fort Chipewyan from the Arctic coast, having worked eastward in that region as far as the Coppermine River. H. S. Peters, of the Atlantic Flyway, is with the Canadian Eastern Arctic Patrol and was last heard from at Fort Churchill, Man., from which point the party on the R.M. S. "Nascopie" was headed north to Baffin Island.

Wholesale Banding Operations.--One phase of the intensive research studies being made of Canada geese consisted of what might be termed as wholesale banding of the species at the Bear River Migratory Bird Refuge, Utah, during June and July. Cecil S. Williams, of the Food Habits Section, reports that a total of 1,266 geese were banded on the four units of the refuge. Besides showing the importance of the Bear River marshes as a producer of geese, it is believed that the banding returns will indicate major flight lanes as well as some of the more important fall and winter resting areas in the western region. Considerable information should be obtained on the seasons of migration and on the unity of the local goose flocks and the relation of this unit to increase and decrease the population.

#### Fur Resources

Visits Various Fur Specialists.--Dr. Thora M. Plitt, assistant microanalyst stationed at Beltsville, Md., while on a vacation trip visited officials of associations and organizations interested in the handling or the production of furs. Dr. Plitt also discussed with Professor Dimick the research work being done at the Oregon State Agricultural College. Much information on the problems of producing clear pelts, the growing of a full, wearable fur, and of nutrition, were obtained that will be valuable in studies of the fibres of fur animals,



Dr. Plitt said. On her return trip she stopped at the University of Wisconsin to discuss with Dr. Wisnicky the progress on the experimental work on fur animals that was initiated at the institution last year.

Muskrat Activity on the Blackwater Refuge.--Only 2 litters were found in 132 muskrat houses opened during July, according to Dr. Herbert L. Dozier, director of the U. S. Fur Animal Field Station, Cambridge, Md. The houses were opened to determine the seasonal breeding of muskrats in that area. Dr. Dozier noticed that the houses were being patched and worked on, which might indicate that a much larger number of litters would be found. All the houses were lined with fine salt-meadow grass even though it was evident that the muskrats had to travel some distance to get this. Many dead muskrats were found during July, which shows evidence of predation by carnivores and by owls and the bald eagle, Dr. Dozier said.

Field Mice not Muskrats Collect Crab Shells.--The many piles of crab shells often found along the banks on the Blackwater Migratory Bird Refuge, Cambridge, Md., can be attributed to the collecting nature of field mice, Dr. Dozier believes. Upon investigation and comparison these crab shells were found to be the old shed skins of soft crabs that afterwards float to the shore. Often these shells are considered to be remains of food of the muskrat, but study showed they merely are castoff shells and not those of live crabs.

Insects Injure Vegetation on Muskrat Marsh.--Seed heads of Juncus roemerianus in one of the experimental pens at the Fur Animal Field Station were destroyed by some insect leaving emergence holes clearly visible, Dr. Dozier reports. Examination of the heads of this plant at several locations on the marsh showed the same condition, he explained, and it would seem that this is an important factor in the proper reseeding of this marsh plant. A close examination of three-square stems showed that the tips contained mines having larvae of a small buprestid beetle. It was quite evident that they were killing the tops of these shoots and preventing the setting of seed. Some of these tunnels in the stem were near, and in some cases, below the water line. These larvae can therefore stand submersion, an interesting ecological adaptation.

Embryological Studies of Fur Animals.--According to Dr. R. K. Enders, of Swarthmore College, approximately 325 more slides of the reproductive organs of the mink and 465 slides on muskrat studies were made in July. During August Dr. Enders spent several days at the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y. getting first-hand information on the breeding of martens. Careful observations were made for a program of detailed study in an effort to determine why the breeding of martens in captivity has never been satisfactory.

Disease Control

Waterfowl Refuge Disease Studies.--During August Dr. Erling R. Quortrup was called to the Des Lacs Migratory Bird Refuge, Kenmare, N. Dak., where waterfowl were stricken by botulism. The type of soil at the margin of the water on this refuge makes it difficult to institute control measures known to be effective, Dr. Shillinger declared. To prevent the accumulation of waste, which is conducive to disease outbreaks, Dr. Quortrup has proposed experimental burning of the unused vegetation. It has not been decided whether this action could be taken without other injury to the refuge, but it is believed that experiments along this line would be justified. Since returning from the Des Lacs Refuge, Dr. Quortrup has been called to the Tule Lake Wildlife Refuge, Calif., and Malheur Migratory Bird Refuge, Oreg., where losses were also reported.

Work Progresses at Patuxent.--Pens containing experimental animals and birds at the Patuxent Research Refuge, Bowie, Md., have been moved again to a new location where they probably will remain permanently. The guard fence around these pens is almost completed. As the staff for handling the animals becomes adequate orderly research will be possible, Dr. Shillinger said. Construction work on the addition to the disease research laboratory has been started, and some new equipment provided.

FEDERAL AID IN WILDLIFE RESTORATION

Inspect Carolina Project.--Albert M. Day, accompanied by A. C. Martin, of the Division of Wildlife Research, left Washington July 31 to inspect a proposed Federal Aid project near Warrenton, N. C. Before returning to Washington, on August 2, they conferred with Commissioner Chalk in Raleigh, N. C.

Audits Federal Aid Expenditures.--Howard B. Leach, traveling accountant and auditor for the Division, left Washington on August 5 to audit the Pittman-Robertson expenditures of State Game Departments. He went to Arizona, Colorado, Missouri, Nebraska, New Mexico, Oklahoma, Texas, and Wyoming, and will return to his official headquarters about September 1.

Alabama Takes Wildlife Inventory.--An inventory of the wildlife resources in Alabama will be made by the Alabama State Fish and Game Department with Pittman-Robertson funds, according to an announcement of approval on July 7. The entire State will be systematically surveyed, Mr. Day said, and work will be directed to determine the present distribution and approximate population of the more important game and fur animals of the State.

Species to be given primary consideration will be white-tailed deer, wild turkeys, and bobwhites. Squirrels, foxes, waterfowl, mourning doves, rabbits, opossums, raccoons, muskrats, black bears, minks, and

otters will also be studied. An effort will be made to determine the limiting factors involved in the restoration of any and all of these species, what restoration possibilities exist, and the research work most needed to facilitate practical restoration and management programs.

F. S. Barkalow, Jr., was appointed project leader. Cooperating with the State Game Department in the conduct of this work are the Alabama Polytechnic Institute, University of Alabama, U. S. Forest Service, U. S. Soil Conservation Service, U. S. Farm Security Administration, and the Biological Survey.

Move Surplus Quail in Arizona.--In certain localities of southern Arizona farmers are complaining that Gambel quails are so abundant that they are destructive to agricultural crops and have asked the State Game Department to do something to remedy the situation. At the same time many potentially good quail ranges in other parts of the States are now underpopulated. To remedy these conditions the Arizona Game and Fish Department on August 9 received approval to use Federal Aid funds to trap surplus quails in the overpopulated locations and move them to the areas now understocked. By agreements with land owners, the areas where the quails will be released are to be established as refuges for at least 2 years. At the end of that time it is expected that population increases will provide a surplus that may be hunted.

Transplant Beavers to Higher Streams.--Arizona farmers have reported damage by Beavers in the low-altitude streams and irrigation canals. Higher altitude streams are in many instances understocked, and beaver dams in these localities would aid in water conservation and in controlling soil erosion and floods. To eliminate damages and to utilize the animals as agencies of restoration and conservation, the Arizona Game and Fish Department submitted a project to live-trap and transport "nuisance" beavers to selected sites where they will not interfere with agricultural pursuits. The project, which was approved on August 9, is expected to aid a valuable fur resource as well as improve the fish carrying capacity of the streams. (See story p.196, "Idaho To Transplant 3,000 Beavers".)

Plant Pheasants in Arizona River Valleys.--A small-scale experiment with the establishment of ring-necked pheasants on a few promising areas in the irrigated valleys of the Gila, Salt, and Verde watersheds will be conducted by the Arizona State Game and Fish Department. Environmental and ecological conditions will be carefully investigated before the areas are selected, it was said, and plantings will be made only where the landowners agree to cooperate in developing adequate food and cover and in helping to protect the birds.

Through the cooperation of farmers and sportsmen it is hoped that within a few years a huntable surplus of these desirable game birds will be available in the irrigated valleys of the three watersheds. The project was approved on August 9.



Colorado Buys Winter Range for Deer.--Some 640 acres of excellent winter deer range in Rio Blanco County will be purchased by the State Fish and Game Department of Colorado with a portion of its Federal Aid funds. The project was approved July 18.

The tract surrounds the junction of two good-sized streams that assure an abundant water supply for the animals. In the past some of the water has been diverted to irrigate the hay meadows on the unit, and it is planned to continue this practice. Part of the hay crop will be harvested and stored for emergency feeding of the deer. Grazing of domestic stock on the area, however, will be controlled. The unit is considered to be key property in providing an adequate winter range in one of the best deer producing areas in the State.

Acquire Winter Range for Deer and Elk.--It is common throughout the mountainous regions of the West to have ample forage for big-game animals on summer ranges, but serious situations develop each winter when climatic conditions compel these animals to migrate to the lower elevations. Since the lower lands have already been intensively cropped by domestic livestock, what remains in the way of food resources is inadequate to carry the game animals through the critical winter months. As a result the States must resort to feeding, or failing to do that, the game animals commit depredations on winter food supplies of domestic livestock, or a segment of the population dies from starvation or related causes. Artificial feeding is expensive and impractical.

One of the problem areas in Colorado is located between the Gunnison River and the Gunnison National Forest in Gunnison County. To alleviate conditions in that area, the Colorado Game and Fish Commission submitted a project, approved on August 7, to purchase approximately 6,250 acres of land for the Sapinero Game Management Unit. In addition to the benefits of wintering deer and elk, the area will, under planned management, support a good population of sage chickens, grouse, and fur animals.

Assurance has been given the State Game and Fish Commission by the Division of Grazing that the grazing rights on adjacent public domain now attaching to the lands being purchased will be reserved for the use of wildlife. On that basis a very substantial increase in the wildlife carrying capacity of the locality will be effected.

Improves State Bird Refuge.--A stock-proof fence will be constructed around the State's Wray Upland Bird Refuge in Yuma County by the Colorado Game and Fish Commission under a Federal Aid project approved on August 7.

At present this refuge unit is not functioning efficiently because of inadequate fencing, it was said. Livestock are cropping the cover to an extent as to permit very little utilization by resident upland game birds --prairie chickens, quail, sharptail grouse, and pheasants.

With livestock excluded and some planting of desirable cover species accomplished, this area will function efficiently as a breeding area and game bird reservoir. It will also aid in replenishing adjacent understocked lands with needed game birds. While the area involved is

relatively small, it is felt that the expansion of the stock will go a long way toward insuring dependable surplus hunting populations of game birds in the State.

Idaho to Transplant 3,000 Beavers.--The Idaho State Fish and Game Department receives thousands of letters annually from ranchers and farmers complaining that beavers are flooding their lands and interfering in other ways with their farming practices. Formerly these beavers were trapped and pelted. (See story p.194 "Transplant Beavers to Higher Streams".) At the same time, the Department received many letters from farmers and sportsmen asking that these animals be planted in streams of the arid and mountainous regions where beavers no longer are found. The species would be valuable as water conservers.

As part of its Federal Aid program, the Fish and Game Department plans to live-trap approximately 3,000 beavers from the overstocked areas in various parts of the State and move the animals to suitable sites where their water-compoundment activities can be utilized. The project was approved on July 21.

The program will be of great value from the standpoint of water conservation and flood and erosion control. It will also help to prevent the destruction of forests by fire and will benefit other forms of wildlife. Through expanding the present beaver range to its former extent where possible, the State will ultimately be able to reap substantial financial benefits by harvesting the surplus populations, the Commission declared. The program has the approval and cooperation of the U. S. Forest Service, the U. S. Division of Grazing, the Biological Survey, and other agencies.

Illinois Develops Lands for Farm Game.--Final plans submitted by the Department of Conservation in behalf of the Illinois Natural History Survey Division for the leasing and development of lands in Urbana County were approved on July 29. The area is to be used for demonstrational and investigational work and is easily accessible from the University. It is planned to establish both annual and permanent food and cover patches in strategic locations throughout the area. These stands will be fenced to avoid encroachment by livestock. Hunting will be prohibited.

Methods for managing fur animals indigenous to the region so that they do not conflict with existing farm practices will be conducted. Pheasants, rabbits, quails, prairie chickens, and fur animals will receive primary consideration.

A phenological calendar is to be compiled covering seasonal, biological events, farming practices, life history phases, and other pertinent occurrences. The information will be gathered in such a manner as to permit statistical analyses. The results of development practices initiated on the area will be carefully observed so as to determine their influence on game populations and ecological changes which may result from such practices.

Will Survey Fur Animal Resources.--Returns to the people of Illinois from fur amount to between \$1,000,000 and \$2,000,000 annually, according to estimates of the Illinois Department of Conservation. To properly administer this valuable resource, the Department feels, it is necessary to have dependable information not now available. To obtain this information a study will be made by the Natural History Survey Division, with the assistance of Federal Aid funds.

The study is designed to determine the distribution of various species of fur animals, the number of unlicensed trappers in the State, the percentage of animals taken by trappers and by hunters, the details of marketing pelts in and out of the State, the income derived from this resource, and as factors affecting fluctuations.

Seven counties, well distributed over the State, have been selected for detailed study. The work will be supervised by Dr. Frison. Louis G. Brown, a graduate of the University of Illinois, is project leader.

Establish Wildlife Unit in Kentucky.--A wildlife restoration unit in Harlan County, Ky., will be established by the Division of Game and Fish of the Kentucky Department of Conservation with Federal Aid funds approved for the project on June 22. Approximately 100,000 acres, surrounding the acquisition unit, are now under a 10-year lease to the Kentucky Department of Conservation as a game refuge.

It is planned to create an inviolate perpetual sanctuary under fence with a resident game manager in charge. Food, cover, and water developments will be initiated. Management problems will be studied on deer, wild turkeys, ruffed grouse, and fur animals. Surplus wildlife produced on the area will be used to restock surrounding lands.

Will Develop Massachusetts State Forest.--To further the program of developing wildlife areas on each of the State forests, the Massachusetts Division of Fisheries and Game, Department of Conservation, has submitted plans for development of the Hawley State Forest. The present project, approved July 21, will provide for type mapping the whole area and formulating a work plan, brushing the boundaries to a width of 15 to 20 feet where they are not defined by woods roads, and the stringing of a single wire fence and the placing of refuge signs around the area. Upon completion of the type mapping and work plan the State will submit additional projects for future development work.

The principal species to be primarily benefited are cottontail rabbits, hares, deer, and grouse. This is the third Massachusetts State forest to be developed under the Federal Aid program.

Expand Rose Lake Station.--A project submitted by the Michigan Fish and Game Department, providing for the acquisition of 198 additional acres of agricultural land for the expansion of the Rose Lake Wildlife Experiment Station was approved on July 25.



The present experiment station, established early in 1938 by the Department of Conservation, consists of 765 acres of typical Michigan farm land with all improvements. A modern residence and office is provided for the manager, and an old farm house has been completely remodeled and converted into a staff house and laboratory for the use of wildlife technicians and other employees of the Department.

A resident farm manager with technical and practical training and experience in agriculture is in charge of the farm and supervises development projects on the area. The ultimate objective of the investigative work being conducted on the area is to test the effectiveness of game management measures that are now commonly recommended and to determine their cost and compatibility with general farming practices. The project will be used as a demonstration as well as a research unit by the Conservation Department and the Michigan State College.

Minnesota Improves Refuges.--The Minnesota State Game and Fish Department administers approximately 3-1/3 million acres of refuges in the State. Investigation disclosed that many of the areas do not maintain adequate breeding stock and, therefore, are not producing wildlife commensurate with the carrying capacity of the refuges. The State plans to use a portion of its Federal Aid funds to increase the facilities for the control of predatory species and the policing and management of the refuges so as to raise the productivity of the refuges and assure maximum results. Where breeding populations of quail and pheasants are below normal, a limited number of breeders will be released so as to shorten the period required to bring the areas up to maximum carrying capacity.

The Department has found that the practice of making the majority of bird releases in unprotected locations does not insure perpetuation of sufficient seed stock, and the plan of maintaining seed stock refuges under conditions prevalent in Minnesota may offer a solution to the problem.

West Virginia Begins Development of Refuge.--A West Virginia refuge management plan provides for establishment of inviolate wildlife refuges for a period (usually 5 years) immediately upon acquisition of the land. According to the plan, each entire unit is protected against all hunting, fishing, and trapping during this time, after which the area is divided into sectors with refuges of smaller size scattered throughout the tract. Early in April the West Virginia Fish and Game Department acquired approximately 9,000 acres known as the Nathaniel Mountain Wildlife Management Project. This was the State's first Federal Aid project. Recently plans have been completed for the first segment of the development program, to include brushing boundaries, putting a single wire strand around the entire area, and posting with metal signs at intervals of 150 to 200 feet. Later it is planned to build a cabin for administrative use and to do additional development work. The project was approved on August 18.

To Post Six State Refuges.--The West Virginia State Fish and Game Department has submitted a project calling for the purchase of 5,000 metal signs to be used in marking the 177 miles of boundaries on 6 State refuges. The signs, at intervals of 150 to 200 feet, will inform the public that wildlife is not to be disturbed. The project was approved on August 24.

North Carolina to Develop Refuge.--An area comprising approximately 90,000 acres of poorly drained pocosin land in Pender County, N. C., owned by the State since 1795 and now under control of the State Board of Education, was transferred to the Department of Conservation and Development in the spring of this year and is now operated as the Holly Shelter Wildlife Refuge. Because of game hazards these lands have not in the past produced wildlife to capacity. Through the proposed developments and subsequent management and protection, it is planned to increase the productivity of the area. Deer, bear, wild turkeys, quail and fur animals are now in the refuge. During the current fiscal year it is planned to construct 5 miles of road to provide access from the nearest highway. A boundary survey will also be executed, signs and boundary markers will be erected, and strip surveys will be run through the area at 1,000 foot intervals. Additional developments, to be determined by experience, will probably consist of foot-trail construction, provision of housing facilities for caretakers, construction of bridges, and construction of dams and dikes for water impoundment. A WPA program totaling \$30,080 has been approved for this year, and a CCC camp for future improvement of the area is being requested. The Pittman-Robertson project was approved on August 9.

To Study Farm Game Problems.--The Division of Game and Inland Fisheries of the North Carolina Department of Conservation and Development will use Federal Aid funds in conducting a study of several phases of its farm game problem, in accordance with a project approved on June 29. It will include an effort to determine the proper period for the open season on doves in North Carolina. A number of persons, many of them farmers, contend that the present season for dove hunting is too early in the year, with the result that many of the birds killed are immature and that in some instances mature birds are still nesting. The State will also study the effectiveness and economic feasibility of a number of recommended cover manipulation practices. Provision is made to assign men to study the entomological aspects of the practice of leaving fence rows, hedge rows, and other uncultivated areas on farm land. The management of the cotton rat and gray squirrel will also be studied.

J. W. Kistler has been selected as leader of the project. North Carolina State College Experiment Station, Soil's Department, Extension Service and Botany Department, as well as the U. S. Soil Conservation Service, North Carolina Forest Service, and State Department of Agriculture, have indicated their willingness to cooperate in the work.

Two New Lakes Projected in North Carolina Sandhills.--The North Carolina Department of Conservation and Development plans to construct



two dams in Richmond County, in accordance with a Federal Aid project approved on June 16. The project is a cooperative undertaking between the Division of Game and Inland Fisheries and the Soil Conservation Service. The North Carolina Sandhills are characterized by rolling terrain with clear streams, and past experiences with small lakes have demonstrated that wildlife has benefited materially. The limited number of lakes now available are focal points for wintering waterfowl, shorebirds, waders, song birds, raccoons, deer, and nesting wood ducks. It is planned to stock the areas with the now rare Carolina beaver.

Virginia to Study Forest Wildlife.--In accordance with a Federal Aid project approved on July 14, the Virginia Commission of Game and Inland Fisheries is replacing its original study of the wildlife effect of forest clearings with a new study that has been broadened. Efforts will be made to determine wildlife populations, density, and distribution and to determine the most economical and practical type of game management on forest lands. A study of clearings will be made under various conditions, records will be kept of the use by wildlife of the clearings, and the effect of various timber management practices on wildlife populations will be studied. Studies will be conducted on the Mountain Lake Demonstration Area in Giles County, the Haven State Refuge in Roanoke County, and the Big Levels Game Refuge on the George Washington National Forest in Augusta County.

The Virginia Polytechnic Institute, through its Departments of Biology, Geology, Entomology, and Agronomy, and the Virginia Cooperative Wildlife Research Unit, the Virginia Agricultural Experiment Station, U. S. Forest Service, and the Biological Survey will cooperate with the Game Department in this study. William Russell DeGarmo has been selected as project leader.

Wyoming to Acquire Feeding Grounds for Elk.--The Wyoming Fish and Game Department, in accordance with a Pittman-Robertson project approved on August 2, will use Federal Aid funds to acquire a tract of land near Jackson, to be used as a winter feeding ground for elk. The tract is said to have supported several hundred elk each winter for the past several years.

It is planned to enclose the area with an elk-proof fence to protect it from summer grazing and save the pasture for early winter use. The fence will also prevent the elk from damaging surrounding ranch property during the winter feeding period. Grasses will be sown on areas now depleted, and water diverted to improve the pasture.

One of the most serious and difficult problems facing game administrators in the west is that of providing winter feeding areas for big-game animals. During the open season ample range is available, but when the animals are forced out of the hills and onto the lowlands by heavy snows, they are frequently hard pressed for food. At best they compete with domestic livestock for forage and browse.

Washington to Restore Deer Range.--The State of Washington, Department of Game, plans to acquire a winter deer range, the first unit of a comprehensive restoration program planned for the State, in accordance



with a Federal aid project approved July 6. The area contains approximately 18,000 acres and formerly constituted one of the finest winter ranges for mule deer in the region. Investigators report, however, that overgrazing has reduced the food supply to one-third or one-fourth of its former abundance. It is planned to regulate grazing so that the plant growth will be restored and the game-carrying capacity increased. Deer, muskrats, beavers, waterfowl, and several species of upland game birds now on the area will provide the needed breeding stock.

Mississippi to Develop National Forests for Wildlife.--The Mississippi State Game and Fish Commission, in cooperation with the U. S. Forest Service, has selected areas to be developed for, and stocked with, deer, turkeys, and beavers in suitable locations on the Leaf River District Wildlife Area in Perry and George Counties, on the Chickasawhay District Wildlife Area in Wayne County, and on the Bienville National Forest Wildlife Area in Scott County. On the Leaf River Purchase Unit 32,560 acres, on the Chickasawhay unit 16,705 acres, and on the Bienville district 12,850 acres have been designated as wildlife management areas. Food and cover for wildlife will be developed on these tracts. Where necessary, some restocking is contemplated. To insure wildlife the greatest possible opportunity to take advantage of the work to be done and to become well established, the Game and Fish Commission and the Forest Service have agreed to close the season for all game birds, game animals, and fur animals on those areas for 5 years. Lynn H. Webb has been designated as development manager to direct operations in the field.

The Bureau of Fisheries and the Biological Survey are also cooperating with the Commission in the development and management of the areas.

New York to Acquire Seed Stock Areas.--The New York Conservation Department's Bureau of Game, has selected two counties in which to conduct a three-way cooperative farm game program approved as a Federal Aid project on June 1. The landowners, local sportsmen, and the Department of Conservation are experimenting with a program built around the principle of providing adequate seed stock refuges. The State, when assured of the cooperation of the farmers and sportsmen in the community, will lease and post farms and provide required patrol facilities. The sportsmen will cooperate in providing additional protection for the game and the farmers' property as well as winter food for the game. Provision is made for the protection of property by the closure to all hunting of certain areas on the farms in addition to the selected seed stock areas. The farmer retains nominal control of all hunting permitted on his property. The plan includes several unusual features and is designed to benefit all farm game species and fur-bearers as well as to improve hunting conditions in surrounding areas.

#### LAND ACQUISITION

Susquehanna Area Closed to Hunting.--The President on August 28 signed a proclamation setting aside an area in Maryland that will be known

as the Susquehanna Migratory Waterfowl Closed Area, located on Chesapeake Bay in Cecil and Harford Counties.

Migratory Bird Commission Meets.--On July 31, the semi-annual meeting of the Migratory Bird Conservation Commission was held in the conference room of the Secretary of the Interior. Assistant Secretary Chapman presided in the absence of the Chairman, the Secretary of the Interior. This was the first meeting held since the transfer of the Biological Survey to the Department of the Interior. Approval was given to the program presented, which consisted of 42 cases on 21 refuge units, totaling 33,983.43 acres. The most outstanding approval was that of the Willow Creek addition to the Sacramento Refuge in California.

#### Surveys and Maps

Inspects Brigantine Surveys.--Arthur A. Riemer has returned from a brief field trip to the Brigantine unit in New Jersey, where he inspected boundary surveys.

Leaves Washington Detail for Moosehorn Refuge.--Kenneth C. Kern, assistant cadastral engineer, has recently completed a 30-day detail in the Washington office. Upon completion of the detail he proceeded to the Moosehorn Refuge in Maine, where boundary surveys will be started.

To Work on Moosehorn Surveys.--T. M. Conrardy, assistant cadastral engineer, and Wesley R. Pearson, under engineering aide, who recently completed a short assignment on the Montezuma Refuge in New York, will be assigned to boundary surveys on the Moosehorn Refuge. George L. Ducret, assistant engineering aid, has also been detailed to the Moosehorn Refuge from the Brigantine unit in New Jersey.

#### Appraisals and Negotiations

Called to Washington.--Charles S. Cook, associate cadastral engineer, in charge of the Central Area and Richard H. Putnam, assistant land negotiator, were called to Washington the latter part of August for a conference with officials concerning proposed activities in the Central Area.

Appraises Lands for Federal Aid Projects.--Elmon Radway appraised lands within proposed refuge areas under the Federal Aid program in Maryland and North Carolina.

#### WILDLIFE REFUGES

Inspects Southern Refuges.--Mr. Salyer left August 10 for a short inspection trip to refuges in North and South Carolina, Georgia, and Florida. He returned on August 24.

Heads New Section.--William V. Taylor, drainage engineer formerly with the Bureau of Agricultural Engineering at Des Moines, Iowa, on June 1 assumed charge of the Section of Structures of the Division of Wildlife Refuges. Warren E. Hall, also formerly with the Bureau of Agricultural

Engineering, was transferred to the Biological Survey on the same date and placed in charge of the engineering work in Regions 4,5,6, and 9, with headquarters at Des Moines, Iowa.

Reports Increase in Wintering Lesser Scaups.--Refuge Manager Andrew H. DuPre, in his annual report for the Cape Romain Refuge, S. C., states that the number of lesser scaups wintering on the refuge increased from 5,000 in the winter of 1937-38 to 15,000 in the winter of 1938-39. Several other species of ducks showed slight population gains, but others decreased noticeably, particularly wigeons, canvasbacks, and ring-necked ducks. Three hundred Canada geese wintered in the vicinity of the refuge.

Turtle Nesting Studied at Cape Romain.--Over 100 turtle nests have been found and marked for observation on the Cape Romain Refuge, according to Mr. DuPre. Only one nest has so far been found to have been disturbed by raccoons. High tides and stormy weather resulted in the washing away of about 75 percent of the least tern and Wilson's plover nests, as well as several turtle nests. A sick or weakened sooty tern was seen on the refuge on June 14 by Wm.P. Baldwin, refuge manager of the Bulls Island unit of the Cape Romain Refuge.

Big-Game Increases at Bison Range.--At the end of the fiscal year, there were 428 buffalo in the herd on the National Bison Range, Mont., an increase of 88 over the number present the previous year. Ten others were disposed of during the year. The elk herd increased from 22 to 40, and the mountain sheep from 48 to 54. Good increases also occurred in the numbers of white-tailed and mule deer on the refuge, the former increasing from 23 in 1938 to 47 this year, and the latter from 109 to 161.

Buffaloes Increase at Niobrara Preserve.--There were 156 buffaloes on the Niobrara Game Preserve, Nebr., at the end of the fiscal year, Refuge Manager Geno A. Amundson advises. This is an increase of 22 over the number present at the same time in 1938. In addition, 24 animals were disposed of during the year.

Many Trees Planted on Tamarac Refuge.--Over 150,000 trees and shrubs were planted on the Tamarac Refuge, Minn., during the fiscal year, Refuge Manager Gill Gigstead reports. This planting was done by C.C.C. personnel, assisted by N.Y.A. boys assigned to the refuge.

Nesting Boxes Used by Goldeneyes.--Ten percent of the 100 tree nesting boxes placed on the Tamarac Refuge, Minn., are being used by American goldeneyes, according to Mr. Gigstead.

New Bird Records Established.--The occurrence of a cinnamon teal on the Sand Lake Refuge, S. Dak., in May increases the total number of species of birds using the refuge to 221. The discovery of a female black duck with six young on the James River north of the Mud Lake Dam brings the list of species known to nest on the refuge to 87.



Many Mourning Doves on Ruby Lake Refuge.--An increase of 50 per cent in the number of mourning doves was noted on the Ruby Lake Refuge, Nev., this year, Refuge Manager Herbert H. Dill reports. The total number of doves on the refuge is estimated as at least 4,000.

Construct Buildings of Salvaged Lumber.--Materials for use in the headquarters buildings at the Ruby Lake Refuge have been salvaged from four buildings transferred to the Bureau by the Civil Aeronautics Authority. The value of these materials is estimated to be at least \$1,200, while the cost of transportation over a distance of 128 miles was less than \$200.

Four Hundred Percent Increase in Wintering Birds Reported.--In his annual report for the last fiscal year Refuge Manager John C. Scharff reports that in January, when the midwinter waterfowl census was taken, there was a 400 percent increase in the number of birds wintering on the Malheur Refuge, Oreg., over the number present in a corresponding period the previous winter. Most abundant were mallards and Canada geese.

Boca Lake Popular with Nesting Geese.--Sixty-four broods of Canada geese were counted on June 5 on Boca Lake in the Blitzen Valley of the Malheur Refuge. Water is fed into this lake by a diversion canal extending down the east side of the Blitzen Valley. The lake will store 3,400 acre-feet of water and can be drained entirely back into the river if desired.

Nesting Waterfowl Abundant on Snake River.--The number of waterfowl nesting on the 336-acre Snake River Refuge, Idaho, is much larger than in 1938, Refuge Manager Ralph C. Winslow reports. Approximately 300 pairs of Canada geese nested on the islands this spring, as compared with 75 pairs in 1938. There was also a noticeable increase in the number of nesting ducks, particularly mallards. Mr. Winslow states that after the Canada geese are hatched, the majority of them migrate to the Deer Flat Refuge, where an ample food supply exists.

Geese Increase on Muleshoe.--The number of Canada geese wintering on the Muleshoe Refuge, Tex., increased from 250 in January 1938 to over 1,200 in a corresponding period this year, according to Refuge Manager James K. Walton. The number of ducks using the refuge decreased by about one-half.

More than 400,000 Persons Visit Wichita.--A total of 442,000 persons visited the Wichita Refuge, Okla., during the fiscal year, Superintendent George E. Mushbach reports. This includes those fishing and the 63,000 who attended the annual Easter morning pageant. The heaviest recreational use of the area occurred from May until the middle of September. The scenic drive to the top of Mount Scott was in constant use throughout the year.

New Nesting Records Established.---Three species of waterfowl nested this summer on the Willow Creek Refuge, Mont., for the first time since the establishment of the sanctuary, Refuge Manager George L. Girard reports. They were the American goldeneye, hooded merganser, and horned grebe. The Nine-Pipe Refuge also had three previously unrecorded nesting species--the Holboell's, horned, and eared grebes. All three of these species and the American goldeneye and ruddy duck nested for the first time on the Pablo Refuge. Mr. Girard reports an increase of about 300 percent in nesting redhead ducks on the Nine-Pipe and Pablo Refuges.

Large Population Gains Reported.---About 21,000 ducks nested on the Des Lacs Refuge, N. Dak., this year as compared with 5,000 last year, according to Refuge Manager Seth H. Low. Large increases were also noted in the numbers of western, eared, and pied-billed grebes, coots, rails, bitterns, and black terns. Several species of birds used the refuge during the fiscal year 1939 for the first time since its establishment, bringing the total number of species recorded for the refuge to 227, of which 93 nest. The refuge is in excellent condition this year. All the water units except one were filled to capacity this spring for the first time, and marsh and aquatic vegetation is making a fine growth.

Ducks Increase on Upper Souris.---Several species of ducks showed large population gains this summer on the Upper Souris Refuge, F. Sheldon Dart, refuge manager, reports. Among these were redheads and canvasbacks, 15 percent increase; green-winged teals, 5 percent; ruddy ducks, 20 percent; gadwalls, 4 percent; and baldpates, 3 percent increase.

New Bird Records Established at Arrowwood.---Twenty-five species of birds occurred on the Arrowwood Refuge, N. Dak., for the first time during the fiscal year 1939, Refuge Manager Lynn A. Griner reports. Among these were the American goldeneye, American merganser, Wilson's snipe, solitary sandpiper, and snowy owl.

New Bird Records Established at Seney.---The species of birds using the Seney Refuge, Mich., was increased by 10 during the fiscal year 1939, according to Refuge Manager C. S. Johnson. Among the birds using the refuge for the first time was the shoveler duck, of which at least one pair nested. The first nests of the marsh hawk and common tern also were seen. With these additions, 197 species of birds are known to use the refuge at some time of the year, and 86 species nest.

Pinioned Canada Geese Nest.---Mr. Johnson reports that the pinioned Canada geese on the Seney Refuge produced 183 goslings this year.

Artificial Islands Attract Nesting Birds.---C. G. Fairchild, refuge manager, reports that on July 12, when 14 of the nesting islands on the Tule Lake Refuge, Calif., were examined, 33 nests and 17 broods of ducks were counted. This is an increase of 43 percent in the number of nests counted on these islands the previous year. The islands with ponds in their interiors were favored by the ducks.

Twenty-three "New" Species Seen on White River.--Twenty-three species of birds occurred on the White River Refuge, Ark., during the fiscal year 1939 for the first time since the establishment of the refuge, according to Howard A. Miller, refuge manager. Among these were the white pelican, yellow-crowned night heron, osprey, Virginia and yellow rails, and spotted and solitary sandpipers.

Large Goose Flight Reported.--Frank Van Kent, acting project administrator in charge of the North Dakota easement refuges, reports that at least 500,000 geese this spring visited the Devils Lake region where the Lac Aux Mortes, Snyder, Brumba, and Rock Lake easement refuges are located. The Ardoch Lake Refuge in the Red River Valley also had a large goose concentration this spring.

Many Gulls Nest on Long Lake.--About 20,000 Franklin's gull nests were observed this year on the Long Lake Easement Refuge, N. Dak., according to Mr. Kent. As was the case last year, the young gulls are being fed almost exclusively on grasshoppers.

Water Conditions Good on North Dakota Easement.--Nearly all of the North Dakota easement refuges received a good supply of water this spring, Mr. Kent advises in his annual report. Thirty-three refuges reached spillway level, 12 were three-fourths full, 11 were at the halfway mark, 8 had sufficient water to take care of the birds hatched this summer, and only 6 could be considered inoperative because of lack or shortage of water.

Waterfowl Population Increases.--Refuge Manager A. D. Campbell reports a 300 percent increase in the number of migratory waterfowl using the Bitter Lakes Refuge, N. Mex., during the fiscal year 1939 over the previous year's populations.

Nesting Records Established at Medicine Lake.--Pelicans, cormorants, blue herons, and Holboell's grebes nested on the Medicine Lake Refuge, Mont., this summer for the first time, Refuge Manager Thomas C. Horn reports. One island on the refuge had 50 pelican, 7 cormorant, 200 gull, and 600 tern nests. The number of waterfowl of all species using the refuge in 1939 is 208 percent larger than in 1938.

Personnel.--Miss Anna M. Neeson was appointed junior clerk-stenographer in the Division of Wildlife Refuges effective June 30.

Elmo See, clerk, was transferred on June 29 from the White River Refuge, Ark., to the Washington office.

Miss Mabel C. Smith, assistant clerk-stenographer, and Jesse R. Cowand, assistant engineering aide, were transferred from the Bureau of Agricultural Engineering effective June 1.

L. M. Winsor, irrigation engineer, who has been in charge of the engineering work on the refuges in the western division of the Bureau of Agricultural Engineering, was transferred on June 1 to the Biological Survey. He will continue in charge of the western engineering division with headquarters at Salt Lake City, Utah.



Samuel H. Lamb, assistant refuge manager, was transferred from the Delta Refuge, La., to the Nokubee Refuge, Miss., to fill the vacancy created by the resignation of Fred R. Zimmerman, assistant refuge manager. Mr. Lamb's position at the Delta Refuge was filled by John D. Kilby, assistant refuge manager, formerly in charge of the Sabine Refuge, La.

The following laborer-patrolmen have recently been appointed: Vernon Ekedahl, Lake Bowdoin Refuge, Mont.; Wm. L. Henderson, Ruby Lake Refuge, Nev.; Mike Dalebout, Lower Souris Refuge, N. Dak.; Ervin Torkildson, Sullys Hill Preserve, N. Dak.; Orrie T. Long, LaCreek Refuge, S. Dak.; Burns T. Carter, Necedah Refuge, Wis.; and Roswell R. Easter, Wheeler Refuge, Ala.

### CONSTRUCTION AND CCC OPERATIONS

Makes Field Inspection.--Mr. Terhune left Washington for Portland, Oreg., on August 9. He made calls at the Portland and Albuquerque regional offices and at the corps area headquarters in Chicago and San Francisco, in addition to inspecting CCC camps at Tule Lake, Hart Mountain, Charles Sheldon, Sacramento, Boulder Canyon, and White River refuges. Mr. Terhune returned to the Washington office on August 29.

Inspects Equipment.--O. W. Teckemeyer spent August 15, 16, and 17 inspecting equipment at Back Bay Camp BS-1, Va., Pea Island Camp BS-2, N. C., and Mattamuskeet Camp BS-3, N. C.

Exhibits CCC Work.---The Mud Lake, Minn., CCC camp is exhibiting at the Pennington County Fair this fall. Charts and pictures will illustrate accomplishments made on work projects. The exhibit itself will cover woodworking, blacksmithy, machine shop, and drawing-class projects.

Personnel.---Edward P. McDermott of the Washington office has been transferred to the Patuxent Research Refuge. He will be in charge of the construction of the addition to the animal laboratory and the new laboratory being built with P. W. A. funds.

Raymond T. Farrelly, for several years an employee of the Division but more recently employed by the Bureau of Agricultural Engineering, reported to the Division on September 2 to work on plans for the new Patuxent buildings.

Grace Eloise Lingeback will be married on September 9 to George Franklin Donnella. Miss Lingeback will continue in her present capacity as stenographer in the division.

News Items from Happy Days.---The following items concerning the Biological Survey work have been taken from "Happy Days" weekly newspaper covering the CCC:

"Tule Lake, Calif.---Wild ducks feared for their lives as hot weather rapidly dried the waters of Grass Lake. But they quacked gratefully when enrollees of Co. 5483 traveled 74 miles to their rescue. Fifty enrollees aided Refuge Manager Fairchild in driving hundreds of ducks into

a corral constructed of poultry wire. The ducks were crated and sent to the Klamath River where they were released."

"Lakeview, Oreg.---In order that the deer and antelopes may play according to the wailing words of the old range riders' song, men of Co. 3442 are working hard at Camp Hart Mountain. Their project is 78 miles northeast of Lakeview where they are providing a refuge for the mule-tail deer, prong-horned antelopes, and sage fowl. The area over which the antelopes lope and the deer disport themselves is also a resting place for migratory waterfowl. Until steps were taken by the U. S. Biological Survey to provide a refuge for these animals, the antelopes were threatened with extinction. On the Hart Mountain refuge are approximately 400 fleet-footed antelopes. Ten years ago there were less than half that number. The range has a good cover of grass and weeds on which deer and antelope feed. Hunting is limited as more of these animals are killed by men than by their enemies, the coyotes.

"Enrollees are fencing the vast area. They are building roads up the mountain side. Last year they constructed 30 miles of roads and 30 miles of telephone lines. They have built 105 miles of truck trails to aid the work of administration and patrol. All possible water resources have been developed in addition to the construction of ranger stations.

"Enrollees participate 100 percent in job training. Fifty attend classes in road construction. Many of them are learning how to operate heavy machinery used on the project. Camp Hart Mountain has developed eight bulldozer operators and as many tractor and road-grader operators.

"It has turned out 12 apprenticed carpenters, 15 apprenticed stone masons, 3 apprenticed plumbers, and 8 apprenticed painters. Four powder men and 12 jack hammer operators were also trained here. Particular emphasis is placed on safety. There have been but four lost-time accidents in the field."

"Brigham City, Utah.---Safety does not stop at preventing accidents, according to Superintendent W. C. Oakden of Camp BS-1, home of Co. 2539. The same care and caution used in avoiding lost-time accidents should be applied to the use of machinery, tools, and equipment, he believes. He has been of the opinion that more than 80 per cent of breakdowns on machinery is due to carelessness or thoughtlessness on the part of the operators. To prove his contention Superintendent Oakden two years ago took over a new half-ton truck. He has operated this truck over all types of roads in all kinds of weather. He did not attempt to spare the truck nor did he 'baby' it in covering a total of 42,867 miles. But he used safe driving principles and did not subject the machine to unnecessary punishment. In those two years not one repair job was needed. The tires have plenty of tread left. Superintendent Oakden uses his pickup truck to show enrollee-drivers what can be done by careful and safe driving. As a result the truck drivers are giving much better performance."

## GAME MANAGEMENT

Illegal Fur Shippers Sentenced.---Six residents of Armstrong Creek, Wis., who had illegally shipped furs to St. Louis were prosecuted in State court at Crandon, Wis., on August 18. Two were fined \$100 or 90 days each in jail, two others \$50 or 60 days each in jail, and the remaining two \$50 or 30 days each in jail. On two additional charges one shipper was fined \$125 or 90 days in jail. On an additional count against another for hunting deer in close season a fine of \$50 or 60 days in jail was imposed and a shotgun ordered confiscated. All of the men were committed to jail. Prosecution was filed by State officers on information obtained by Federal agents.

Fined \$50 for Having Live Geese Illegally.---A resident of Pierre, S. Dak., appeared in State court on July 14, charged with illegal possession of five live wild Canada geese on July 11. He entered a plea of guilty and was fined \$50 and costs of \$3.70. Twenty-five dollars of the fine was suspended.

Sentenced for Killing Swans.---A United States game management agent learned on July 20 that a resident of Bottineau, N. Dak., had killed two whistling swans on April 26, 1939. The defendant appeared in State court, entered a plea of guilty, and was fined \$50 and costs of \$3.50. He was also sentenced to 30 days in jail, but this sentence was suspended on payment of the fine. His rifle was confiscated.

Alaska Game Law Administration

Meets with Alaska Planning Council.---Executive Officer Frank Dufresne of the Alaska Game Commission attended the meeting of the Alaska Planning Council, of which he is a member, during the period from May 22 to 25. Taxation and land surveys were the principal subjects discussed, he reports.

Appointed Alaska Game Wardens.---To facilitate enforcement of the Alaska Game Law, particularly with reference to shipment of game and furs to the United States, the Alaska Game Commission has appointed all U. S. game management agents as deputy Alaska game wardens.

Surveys Alaska Peat Deposits.---Dr. A. P. Dachnowski-Stokes, of the Department of Agriculture, during the summer made a survey of peat deposits in Alaska and the effect there of such deposits in relation to wildlife. Dr. Dachnowski-Stokes spent some time in southeastern Alaska and later proceeded westward to Anchorage and other points. He reports that while in Alaska he had his first airplane ride, flying with Wildlife Agent Sam O. White.

Biologist Visits Copper River Flats.---After spending a few days in Juneau, where he arrived on April 11, Flyway Biologist L. J. Goldman, with Wildlife Agent Rhode, made a survey of the Cooper River Flats. Later Agent Collins flew Mr. Goldman over the Susitna Flats at the head of Cook Inlet. From there he went to Fairbanks and then by river boat down the Yukon.



Motion Pictures Shown.--Scenes from a cooperative motion picture taken by Joseph Yolo, a commercial photographer, have been acquired by the Alaska Game Commission. The Commission now has five 400-foot reels. These were given an excellent reception by the National Editorial Association when shown before that organization. The Commission's films will be shown in public schools and elsewhere throughout the Territory.

Game Birds Introduced.--Through the courtesy of the Washington State Game Department the Alaska Game Commission recently received 864 Mongolian pheasant eggs and 100 chukar partridge eggs which were divided between the Territorial experiment stations at Petersburg and Mentanaska for hatching and rearing. The Commission has purchased and liberated 12 Mongolian male pheasants in the Ketchikan area where a shortage of male birds was reported by the Alaska Sportsmen's Association among birds liberated by that Association about 3 years ago. Mr. Dufresne during his visit to the States early this year arranged with the Wisconsin State Game Department to obtain shipments of brown and blue-eared pheasants and cheer pheasants for experimental stocking in the Territory.

Bear Plaques Placed on Boats.--Bronze bear plaques 14 inches in diameter have been placed on three of the Commission's patrol boats. Similar ones were attached to the smoke-stack of the Brown Bear. Smaller plaques previously purchased are used on speed boats, river boats, and tenders.

Violations Reported.--During the quarter ended June 30, a total of 71 cases based on violations of the Alaska Game Law were reported, 6 involving aliens, 43 involving fur and game, and 22 involving fur accidentally taken and voluntarily surrendered. Skins of fur animals, mostly beaver, mink, and marten, totaled 164. Fines aggregating \$2,455 were assessed, and jail sentences imposed totaled 1,410 days.

Inspects Fur Houses.--Webster H. Ransom, in charge of Alaska Game Law enforcement in the Seattle district, recently completed several investigations and made inspections of fur houses in Seattle and Tacoma. He also devoted some time to sealing beaver skins.

Forfeited Furs Sold.--The Alaska Game Commission on June 1 held a public auction at which forfeited illegal fur pelts, mostly beaver, were sold for \$2,291.55.

Checks and Seals Beavers.--Wildlife Agent Gallwas, transferred in July to District No. 13, recently made a trip up the Taku River to the Canadian boundary with Deputy Wildlife Agent Huntoon to check beaver trappers and seal beaver pelts. He also made several short trips in the vicinity of Juneau to check post-season trapping activities.

Makes Post-season Patrols.--During the absence of Agent Sarber from District No. 2, Deputy Warden Howard Jensen was in charge and made a number of post-season patrols, at the same time sealing beaver pelts. A number of game law investigations were completed and several cases prosecuted.

Personnel.--K. C. Talmage, for many years captain of the Alaska Game Commission patrol boats, was promoted to the position of office wildlife agent to fill the vacancy created by the transfer of David Wood, Jr., to the Biological Survey to be in charge of the bait mixing station at Pocatello, Idaho.

George McC. Gullufsen was appointed deckhand on the M/S Bear replacing S. Donald Mills, resigned.

Clare J. Krogh, marine engineer on the M/S Grizzly Bear, was transferred effective May 4 to the Biological Survey as assistant engineer on the M/S Brown Bear.

Robert N. Huntoon, deputy wildlife agent, transferred to the Forest Service CCC, effective June 26.

J. Malcolm Greany was appointed assistant fiscal accounting clerk in the Juneau Office, effective June 26.

Roy F. Roach was appointed marine engineer, effective June 26, to replace Clare J. Krogh on the Grizzly Bear.

#### PREDATOR AND RODENT CONTROL

Confers in the Field.--On August 3 Mr. Green left Washington on an extended field trip through the southwestern and western States to confer with regional directors, district agents, and cooperators. He planned to confer with David Wood, Jr., manager of the Bureau's supply depot and laboratory at Pocatello, Idaho, regarding a new system for purchasing and dispensing supplies from the depot. Mr. Green expected to return to Washington about September 18.

Inspects Work in Atlantic States.--Following the regional personnel conference in Boston, Mass., August 21 and 22, W. E. Riter with Donald A. Spencer inspected mouse-control work in the Atlantic States. Mr. Riter returned to Washington August 26.

Resigns to Direct Idaho Game Department.--Owen W. Morris resigned effective August 1 as assistant district agent of Idaho to accept the directorship of the Idaho Fish and Game Department. Appointed junior district agent in the Idaho district on September 23, 1935, Mr. Morris had since been employed in that State. He had had wide experience in Idaho as a stock rancher previous to his accepting employment with the Biological Survey.

Marauding Wolf Captured in Missouri.--District Agent A. E. Gray reports that on July 29 a cooperative hunter, W. E. Smith, trapped an old male wolf in La Clede County, Mo., whose depredations were well known among the stockmen of the area. During the 10 days before its capture, the wolf killed sheep and lambs valued at \$100, leading the local sheep association to offer a bounty of \$70 and the County Court an additional \$70. It required 5 weeks for Hunter Smith to bag the animal. He stated that this was the smartest wolf with which he had attempted to match wits.

Personnel.--On August 1 Carlyle Carr, assistant district agent in Oklahoma, resigned to take care of personal business in California. Mr. Carr transferred from the Geological Survey to the Biological Survey on October 1, 1922. He served as district agent in the South Atlantic States with headquarters at Gainesville, Fla.. During his employment with the Bureau Mr. Carr was detailed to the Control Methods Research Laboratory for crawfish studies in the South. More recently he assisted in control operations in Oklahoma and Kansas.

Richard T. Talley was appointed on August 10 as junior district agent with headquarters at San Antonio, Tex., to assist in the supervision of cooperative predator and rodent-control in the State.

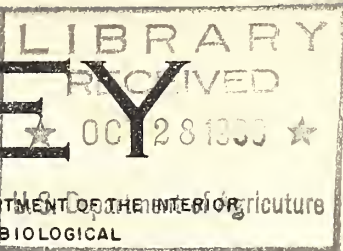
Miss Ellen C. Anderson transferred to the Biological Survey from the Federal Trade Commission, effective September 5, to fill the assistant clerk stenographer vacancy in the district agent's office at Denver, Colo., occasioned by the resignation of Mrs. R. Virginia Haney, who left the Bureau to make her home in Chicago.

District Agent Robert B. Dean was detailed to the Washington office on August 10 for a period of 30 days, to assist Mr. Riter in routine work during Mr. Green's absence.

Auction Ram to Raise Funds for Predator Work.--District Agent A. E. Gray reports a unique plan to raise funds for predator control in Texas County, Mo. Stockmen and farmers auctioned a purebred Hampshire ram for \$185. The proceeds will pay part of a cooperative hunter's salary working under a 6-month agreement.



# THE SURVEY



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Vol. 20

Washington, D. C., September 1939

No. 9

## GENERAL NOTES

John Bird Burnham Dies.—Through the death of John Bird Burnham at his home near Willsboro, N. Y., on September 24, the Biological Survey has lost a lifelong friend. Mr. Burnham was 70 years of age at the time of his death. He won distinction as an author, explorer, and conservationist. He was one of those who helped to obtain the ratification of the Migratory Bird Treaty, and the passage of the Migratory Bird Treaty Act. The Migratory Bird Conservation Act, passed in 1929, is another important piece of Federal conservation legislation which benefited by his interest and effort. Mr. Burnham served as chairman of the Advisory Board, Migratory Bird Treaty Act for 20 years. He was president of the American Game Protection Association from 1911 to 1928, during which time that organization became of the greatest importance as an agency working for the establishment of sound policies and programs, both State and National, for the conservation of wildlife.

John Burnham's explorations and expeditions were made into many remote and nearly inaccessible wilderness regions; they led him into countless adventures and hardships. In 1921 he went on a hazardous expedition into Siberia in search of a rare specimen of mountain sheep. He traveled nearly 25,000 miles to accomplish his mission.

Although he was never a member of the Survey, Mr. Burnham's name is closely associated with that of our organization because of assistance rendered during the difficult years of the Bureau's expansion and growth from a research agency to its present status as the greatest service of its kind in the world.

Many of us in the Survey have been honored by John Burnham's friendship. We knew him as a fine sportsman, and we admired and respected him for his modesty, his quiet courage, his intense love of nature. We knew that we could count upon his presence and his help whenever an issue of importance to wildlife was to be decided.

Mr. Burnham is survived by his widow, Mrs. Henrietta DuBois Burnham, and by their three children, Rose Van L. Burnham, Koert D. Burnham, and John D. Burnham, and to them the members of the Biological Survey extend their most sincere sympathy.--H.P.S.

Hold Inter-Regional Conference at Des Moines.—An interregional conference of Bureau personnel from Regions 4 and 6 was held at Des Moines, Iowa, on September 21-23, inclusive. Speakers at the general and group sessions were Messrs. Ball, Cook, Cruikshank, Furness, Gillham, Hall, Kreager (who read a paper by Mr. Elmer), Leichhardt, Regan, Roberts, and Steele (who read a paper by Mr. Salyer).

Represents Bureau in Two Broadcasts.--Geo. W. Kerr, administrative assistant in the Denver regional office, represented the Biological Survey in two recent broadcasts in the Sunday series "Problems of the Plains and Mountains", being carried on by the Farm Security Administration in cooperation with other Federal agencies. On August 20, Mr. Kerr discussed the Bureau's work for wildlife conservation through restrictions on hunting, establishment of Federal refuges, and the program of Federal aid to the States. On the following Sunday he outlined this year's hunting regulations, discussed further the waterfowl restoration program, and explained the Bureau's policy and practices in controlling predatory animals and rodents.

#### ADMINISTRATION

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (AFO) series since the last issue (August) of the Survey:

- No. 33. Revised. Amendment No. 2. Transportation of household goods and personal effects. (September 13.)
- No. 39. Revised. Amendment No. 2. Reimbursement from ERA funds for use of personally-owned car on mileage basis--Certificate required. (September 12.)
- No. 88. Second Revision. Amendment No. 1. New form of informal agreement and acceptance of same by regional director. (September 18.)
- No. 221. Revised. (Supersedes AFO No. 221 dated December 28, 1937, and Amendments Nos. 1 to 6, inclusive.) Recording and reporting personal-injury and property-damage accidents. (September 22.)
- No. 268. Amendment No. 2. New provisions of law applying to mail sent under frank; quarterly reports on weight of mail matter transmitted. (September 7.)
- No. 278. Administration of oaths to accounts for travel or other expenses against the United States. (September 7.)
- No. 278. Supplement. Administration of oaths to accounts for travel or other expenses against the United States. (September 13.)
- No. 279. Acceptance and distribution of contracts and informal agreements. (September 19.)
- No. 280. Purchase of twine made from foreign materials prohibited. (September 20.)
- No. 281. Addresses on communications to Game Management Agents. (September 20.)
- No. 282. Accountable documents - Department of the Interior. (September 20.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 89. Supplement No. 2, Amendment No. 1. Schedule of contracts for gasoline and lubricating oil, service station deliveries only. (August 28.)

- No. 94. Stenographic reporting service. (August 28.)
- No. 95. Procurement of enamel and lacquer paints for use on automotive and heavy equipment. (September 2.)
- No. 96. Contracts for the procurement of calipers, clamps, twist drills, grindstones, alemite guns, jacks, levels, measuring tapes, threading sets, and wrenches (Class 41). (September 2.)
- No. 97. Supersedes No. 44 and Amendment No. 1 thereto. Contract for the procurement of antifreeze compound (EVEREADY PRESTONE) for the period ending June 30, 1940 (Class 51, Supplement No. 5). (September 8.)
- No. 98. Supersedes No. 37 and Supplement No. 1 thereto. Contracts for repair of office machines for the period July 1, 1939, to June 30, 1940 (Class 54, Supplement No. 6). (September 14.)
- No. 99. Procurement of aluminum engine finish for marine motors. (September 21.)

## PUBLIC RELATIONS

Meets With Maryland Sportsmen.--Requested to discuss the topic "Don't Shoot It All with a Gun; Use a Camera," Howard Zahniser attended a meeting of the Maryland Sportsmen's Luncheon Club in Baltimore on September 26. As an example of experiences in hunting with a camera he recounted his own in obtaining color photographs in Lake Erie marshes a year ago at a time when it was impossible to use blinds. He showed slides made from the color photographs obtained then.

Broadcasts.--On August 27, the importance of migratory waterfowl hunting regulations was dramatized over the Mutual Broadcasting System Network on "America's Wildlife," a weekly program sponsored by the American Wildlife Institute. Ludwig Caminita, jr., of the Section of Current and Visual Information, concluded the broadcast with a summary of the 1939 hunting regulations.

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Seasons for migratory game birds, 1939-40. Compiled by Frank G. Grimes, Administrative Assistant, Division of Public Relations. Poster 63, 1 p. August 1939. Received September 8.
- Migratory bird treaty act regulations. Separate (unnumbered) from Federal Register, August 16, 1939, 4 F. R. 3621 DI, 11 pp. Received September 8.
- Food habits of prairie dogs. By Leon H. Kelso, formerly junior biologist, Section of Food Habits, Division of Wildlife Research. Circular No. 529, 15 pp. June 1939. Received September 11.
- Big-game inventory of the United States, 1938. Compiled in the Section of Wildlife Surveys, Division of Wildlife Research. Wildlife Leaflet BS-142, 11 pp. August 1939. Received September 12.
- Suggestions for the control of vagrant domestic pigeons. Prepared in the Section of Food Habits, Division of Wildlife Research. Wildlife Leaflet BS-143, 4 pp. August 1939. Received September 15.



Raising deer in captivity. Prepared in the Section of Wildlife Surveys, Division of Wildlife Research. Wildlife Leaflet BS-144, 6 pp. August 1939. Received September 22.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

- Bassett, C. F. Research work with fur animals. Fur of Canada 4 (10): 7-9. June 1939.
- Hicks, H. W. Uncle Sam's wildlife refuges in Arkansas. Ark. Gaz. Sept. 24, 1939. Illus.
- Jackson, H. E. T. The bighorn or mountain sheep. North Amer. Big Game 285-290, illus. Sept. 12, 1939.
- Miller, J. P. Farmer-sportsman cooperation. Outdoor Amer. (Excerpts) 4 (9 & 10): 8. July 8, 1939.
- Shillinger, J. E. The relationship of diseases of birds and domestic poultry. Seventh World's Poultry Cong. and Expo. Proc. 241-243. 1939.
- Templeton, G. S. Feed requirements for rabbits. Seventh World's Poultry Cong. and Expo. Proc. 468-471. 1939.
- Zahniser, H. Indoors and out. Nature Mag. 32: 423, 471. Oct. 1939.

Press and Radio Information and Addresses, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- 35 CCC camps operate on wildlife refuges. Press Statement P. N. 76502. Released Sept. 22.
- Waterfowl season opens October 1 in 8 States. Press Statement P. N. 77322. Released Sept. 29.
- Prairie dogs vegetarians, compete for range, study shows. Press Statement P. N. 77260. Released Sept. 29.
- War seen as threat to Fur Conservation. Press Statement P. N. 77738. Released Oct. 4.

School Days Are Here Again.--As thousands of schools throughout the country opened their doors to receive the youngsters who will learn their three R's during the 1939-40 semesters, the Division of Public Relations prepared itself for the annual deluge of requests from children who want "your book on animals and birds." Within a week after Labor Day, the letters began to arrive, and by the end of September more than 500 requests had been received from students in all parts of the country. According to latest reports, youngsters are still writing for the latest book on "animals and birds."

## WILDLIFE RESEARCH

Wildlife Surveys

Research on Sheldon Antelope Refuge.--Olaus J. Murie, biologist, left his field station at Jackson, Wyo., August 2, for the Charles Sheldon Antelope Refuge and Range, Nev., where he will study forage and range conditions and the interrelations of antelope and domestic stock. He will spend about 3 months on the refuge this fall and will probably continue his studies again during the winter and in the spring. Charles H. Rouse, associate biologist, stationed at the Wichita Mountains Wildlife Refuge, Okla., joined Mr. Murie at the Charles Sheldon Refuge the first week in September to assist in the investigations.

Visits Mammal Laboratory.--On September 20, T. Van Hyning, director of the Florida State Museum, Gainesville, Fla., visited the mammal laboratory and conferred with A. H. Howell.

Charles M. Elliott, in charge of the Wildlife Division of the State Department of Natural Resources, Atlanta, Ga., and one of his co-workers called at the mammal laboratory on September 28 to confer with Mr. Howell.

Food Habits Research

Proposed Refuge Sites Studied.--During the latter half of August and the first half of September Dr. Clarence Cottam was in the field inspecting proposed refuge sites, including the Reelfoot area in Tennessee and the Catahoula Lake region in Louisiana. He also visited Biological Survey refuges on the Gulf coast where he conferred with Bureau officials and helped outline research studies to be made next season. Dr. Cottam inspected some malaria-control drainage projects in Alabama, studying mosquito-control problems as they relate to wildlife conservation. Some of these projects appear to be highly destructive to wildlife interests and aid little in the control of mosquitoes, Dr. Cottam said. He returned to Washington on September 15.

Detailed to Washington.--On August 2, Associate Biologist Charles C. Sperry arrived from the Denver food habits laboratory on a month's detail in Washington for laboratory studies on the food habits of shorebirds. While in Washington Mr. Sperry consulted with Dr. Thora N. Plitt, of the Section of Fur Resources, concerning her studies on structure of fur hairs and conferred with Bureau officials regarding his manuscript on the food habits of coyotes. He returned to Denver on September 2.

Compile Data for S.C.S.--Two W.P.A. employees have been reassigned to the food habits laboratory by the Soil Conservation Service to continue working up statistical data on the food habits of birds, for use in planning wildlife improvements on erosion-control projects.

Use Facilities of Biological Survey.--During September Miss E. E. Becker, biology teacher at Hollings College, Roanoke, Va., spent several days in the food habits research laboratory gathering data from Bureau records for use in connection with graduate studies on the food habits of birds. Miss Becker is working for her doctorate degree at Cornell University and is preparing a thesis on the food habits of the brown thrasher.

Laboratory Assistant Reports for Duty.--Ray C. Erickson reported for duty in Washington on September 1 as laboratory assistant for the Alabama Cooperative Wildlife Research Unit. Mr. Erickson was appointed by the Alabama unit and assigned to the food habits laboratory to facilitate the examination of stomach material of game birds and other animals collected for game management studies.

Concentration of Aquatic Birds Observed.--On August 5 Assistant Biologist Johnson A. Neff, of the Sacramento food habits office, with Game Management Agents Thomas R. Lawhorn and Alvin W. Elder, observed an interesting concentration of aquatic birds just south of the Laguna Dam on the Arizona side of the Colorado River. Among the birds noted were more than 100 snowy egrets, a few American egrets, black-bellied plovers, yellow-legs, wood ibises, glossy ibises, blue herons, avocets, godwits, and coots, and nearby were two red-head ducks and an American bittern.

Shooting, Not Storms, Drives Doves from Arizona Valleys.--Continued studies of the white-winged doves furnish evidence that shooting, not storms, causes the rapid movement of birds from the Arizona valleys, of which many sportsmen have complained during normal seasons, according to Mr. Neff. The continued drift of the widely scattered small bands of birds from areas where heavy shooting occurs into the valleys where the birds have not been heavily shot has been marked. In one or two locations very favorable to the birds, where no shooting occurred until August 22, the population had steadily increased.

Birds Damage Rare Bulbs.--Severe damage to rare ornamental bulb plantings caused by California thrashers digging and destroying the bulbs is being reported by large growers in Ventura County, Calif., Mr. Neff states. Approximately \$200 damage has already been done in one nursery. Covering the bulb beds was recommended.

Citrus Orchards Invaded.--Investigations into complaints that California citrus orchards were being damaged by Gila woodpeckers and gilded flickers were made in August by Mr. Neff. He found that oranges, especially Valencias, were damaged worst and that the outside rows or those near power or telephone poles suffered the most. Advice was also given to owners of peach and prune orchards who complained of damage by linnets. Some time was spent in observing the linnet activities and in planning future test work.



Cooperation Solicited.--In connection with current nutritional studies being conducted at the Patuxent Research Refuge, Bowie, Md., by Ralph A. Nestler and W. W. Bailey, efforts are being made to procure supplies of seeds of native quail-food plants. The U. S. Forest Service and the Soil Conservation Service, as well as various refuge managers and field biologists of the Biological Survey, are cooperating in obtaining this material. The Section of Food Habits is anxious to obtain considerable quantities of a number of species, Dr. Cottam said, and anyone able to cooperate is requested to get in touch with the Section's office in Washington.

The list of seeds needed for the bobwhite quail nutrition study are: Legumes (Herbaceous)--Chamaecrista fasciculata and C. nictitans (part-ridge-pea); Desmodium (beggartweed), any available species; Galactia (milk pea), especially G. regularis and G. volubilis; Lespedeza (lespedeza), especially L. striata and L. stipulacea; and Strophostyles (wild bean), S. helvola, S. umbellata, and S. pauciflora. Trees and Shrubs--Liquidambar styraciflua (sweetgum); Myrica cerifera (waxmyrtle) and M. carolinensis (bayberry); Pinus (pine), especially southeastern species; Quercus (oak), especially species having small acorns; Robinia pseudoacacia (black locust); and Rhus (sumac), R. copallina, R. glabra, and R. typhina. Grasses--Panicum (panicum), P. capillare, P. dichotomiflorum, and other species; Paspalum (paspalum), P. ciliatifolium, P. boscianum, and other species; and Digitaria (crabgrass), especially D. sanguinalis and D. ischaemum. Miscellaneous Plants--Ambrosia artemisiifolia (ragweed); Centrosema (Bradburya) virginianum (butterfly-pea); Impatiens (jewelweed), I. biflora and I. pallida; and Scleria (nutrush), and available species.

Beaver Ponds Important to Waterfowl.--Food and cover surveys made by Assistant Biologist Cecil S. Williams on ponds in the Bear River (Utah) drainage in August revealed beaver aids to waterfowl habitat. The environment created by beaver, aside from its value to man's other interests, is attractive to waterfowl. Mr. Williams reports that aquatic vegetation in the beaver ponds was profuse, and a number of birds were seen on the ponds. A study of beaver-waterfowl relationships is being made by three students of the Utah Cooperative Wildlife Research Unit under funds provided by the Federal Aid Act.

Makes Photomicrographs of Hair Structures.--Mr. Williams, who has been identifying mammal hairs in food habits studies of carnivores and predacious birds, reports a method has been worked out by which good photomicrographs may be obtained of key characters in hair structure. Because many hair structures cannot be readily described, illustrations are important in hair studies.

Redhead Mortality Due to Lead Poisoning.--A considerable mortality of redheads on marshes of the Bear River Refuge, Utah, during August was reported by Mr. Williams. Examination of gizzards of dead birds

showed that lead poisoning was the principal cause of death. All sick birds are brought in to the hospital where they receive treatment. All data collected, as well as carcasses of birds not too decomposed, are turned over to the Section of Disease Control for study.

Environmental and Food Habit Studies Continued.--On August 15 Robert H. Gensch made a short inspection trip to the George Washington National Forest, Va., to continue studies on the food and environmental relationships of ruffed grouse. During this trip he initiated some studies to determine the food yields of various species of ruffed grouse food plants. Further studies were made also on the habitat requirements of the species.

### Distribution and Migration of Birds

Activities of the Flyway Biologists.--Accompanying the Canadian Eastern Arctic Patrol on the R.M.S. "Nascopie," Harold S. Peters, the Atlantic Flyway biologist, made waterfowl observations at various points in the Northwest Territories, Quebec, Davis Strait, Baffin Bay, Ellesmere-land, Lancaster Sound, Prince Regent Inlet, Clyde River, Baffinland, and Cumberland Sound. At Somerset Island a purple sandpiper, a European ringed plover, semipalmated sandpipers, many Thayer's gulls, horned larks, pipits, and snowbuntings were observed. Mr. Peters did not report many waterfowl, but no doubt further information on this subject will be forthcoming and will be included in his detailed report, Mr. Lincoln said.

Mr. Peters arrived in Halifax, N. S., on September 23 after a "black-out" trip, because of the declaration of war by Canada. He will conduct a survey of waterfowl concentrations in the Maritimes and probably will be in the Washington office about October 12.

Charles E. Gillham, the Mississippi Flyway biologist, has returned to his headquarters at Edwardsville, Ill., after his observations in the Arctic. His trip is considered very successful, particularly since he reports that he really got into the goose nesting area this year. Among his many interesting observations was the opportunity of "seeing a whole island full of lesser snows hatch off." He had 300 nests under observation and estimated 3,000 nesting females on that particular island. Mr. Gillham obtained many pictures that will be used for colored slides and also had some interesting motion pictures.

Dr. George B. Saunders, the Central Flyway biologist, has returned to his headquarters in Denver, Col., after conducting waterfowl investigations in Alberta and Saskatchewan. He states that although conditions were widely at variance from one district to another, in general he believes that the southern third of these Provinces, except for southeastern Saskatchewan, had a larger population of breeding ducks than last year. Information regarding the duck population in the northern third of the Provinces is meager, but the concensus indicates a noticeable decrease in breeding stock except in the Athabaska delta and in a few smaller areas.

Dr. Saunders's own opinion is that although a larger percentage of ducks nested in southern Alberta and Saskatchewan, there was no conspicuous increase in total breeding stock in these Provinces as compared to that of 1938.

Luther J. Goldman, the Pacific Flyway biologist, completed his Alaskan waterfowl investigations and returned to headquarters in Berkeley, Calif., on August 22. On the question of the waterfowl status in Alaska, Mr. Goldman believes that those nesting grounds are so vast and underpopulated that after the main wave of migration passes and scatters in pairs and small groups, it is swallowed up, and it is necessary to depend largely on the public opinion of the inhabitants. On this basis the reports were good, particularly on geese, swans, and cranes.

Dr. Saunders and Mr. Goldman are making plans for their annual fall and winter observations in Mexico.

Prepare for Fall Waterfowl Inventory.--Questionnaires for the fall status of waterfowl has been mailed to approximately 700 qualified observers.

Interesting Returns from Banded Birds.--The following are returns of outstanding interest from banded birds, showing band number, place and date of banding, and place and date of recovery:

Herring gull:

207898, Mich., Hat Is., 7/?/22 Mich., Beaver Islands, 6/?/39

Hairy woodpecker:

B388645, N. Dak., Jamestown, 11/29/33 N. Dak., Jamestown, 1/8/39

Chimney swift:

A45966, Wis., Madison, 5/30/29 Wis., DeForest, 6/12/39

C22746, Ill., Quincy, 10/6/29 Mo., La Grange, 6/2/39

139-88054, Va., Charlottesville

5/14/39

Que., Montreal, 5/25/39

Bronzed grackle:

34-366837, Ill., Waukegan, Ill., 10/22/37

(shipped to Buffalo, N.Y.,

where it was released) Ill., Lake Forest, 6/?/39

Purple finch:

C121824, Mich., Sault Ste. Marie,

7/16/32

Mich., Sault Ste. Marie,

(Trapped and released on following

dates: 5/21/33, 5/12/34, 4/29/35,

5/10/36, 5/16/37, 4/17/38, 5/23/39).

Robin:

373049 and

34-201282, both banded 8/29/38, South Chatham, Mass., Both killed

1/28/39 Hemingway, S. C.



Fur Resources

Visits Fur Farm.--Frank G. Ashbrook, in charge, Section of Fur Resources, and C. Edgar Cope, of the Division of Construction and CCC Operations, left Washington September 18, for the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., to inspect the construction work in progress and make plans for additional buildings to complete the building program at this station. The present laboratory will be enlarged, a new refrigeration unit installed, and a small residence erected.

On September 20, Mr. Ashbrook arrived in New York City and attended a luncheon at the Pennsylvania Hotel given by Col. P. B. Fouke, Fouke Fur Company, St. Louis, Mo., at which time the new brown Alaskan seal color was introduced to fur manufacturers and salesmen. There were about 300 persons present and Col. Fouke had 16 Alaskan seal skins for them to examine. The consensus was that the new brown color is better adapted to the fur trade than the safari brown because it is a neutral color and can be worn by different types of women.

Mr. Ashbrook, on September 20 and 21, worked with fur experts who graded and appraised 53 dressed karakul lamb skins produced by the Bureau of Animal Industry at Beltsville, Md., last spring. All the persons examining the skins were of the opinion that a marked general improvement was evident by the increase in quality.

Makes Extended Field Trip.--On September 13 Chas. E. Kellogg visited the Ninth Regional Office at Omaha, Nebr., and discussed with Milton Furness matters pertaining to the fur-resources possibilities of this particular region. While in Omaha Mr. Kellogg conferred with fur-animal breeders assembled from all parts of the United States.

Mr. Kellogg, on September 18, visited the office of Indian Affairs in Minneapolis, Minn., to discuss with Credit Agent S. N. McKinsey the progress of the muskrat project that is being formulated to assist the tribe of Indians on the Bad River Indian Reservation in northern Wisconsin.

In discussing fur-farming operations in Minnesota with several breeders it was found that many of them have produced skins at a loss this past year. The breeders are also worried about the prospects of an unsatisfactory market caused by war conditions and the probability of a large number of silver fox and ranch mink skins being sent to the United States from the Scandinavian countries because of the European situation.

At Winona, Minn., Mr. Kellogg inspected the various areas of the Upper Mississippi Wildlife Refuge and discussed with Superintendent Ray C. Steele problems of some experimental work on muskrats. At a Rotary luncheon on September 20, he was requested to outline the research work on fur animals that is being done by the Section of Fur Resources. On September 21 Mr. Kellogg met with Dr. Walter Wisnicky, in charge of the fur-animal experimental work for the University of Wisconsin.

Rabbit Station Has Visitors from China.--Mr. and Mrs. E. L. Johnson, of Peking, China, and Guy Thelia, of Fuchow, visited the U. S. Rabbit Experiment Station, Fontana, Calif., early in August. The visitors were particularly interested in feeding problems. Where they have to use byproducts as much as possible their concentrate feed is made up largely from a byproduct of the soybean-oil and soybean-milk manufacture. Roughage consists in a large measure of used tea leaves. The Johnsons maintain a herd of about 100 does that provides employment for three Chinese. Mr. Thelia is an instructor in the Agricultural College at Fuchow. The college has a herd of rabbits as part of its livestock equipment.

Rabbit Dentition Studied.--Director George S. Templeton, of the rabbit station, has made a collection of skulls of rabbits 1, 2, 3, 4, and 5 years of age which he will use to study the dentition of the domestic rabbit. This collection should be of considerable interest to the numerous rabbit breeders who visit the station each year.

Will Quick-Freeze Rabbits for Market.--The proprietor of one of the oldest rabbit butchering establishments in Los Angeles, Calif., visited the rabbit station recently and discussed rabbit meat marketing problems, particularly with reference to the quick-frozen rabbit carcasses. In cooperation with Robert Slocum, senior marketing specialist of the Department of Agriculture, it has been possible to develop a glaze on the meat that causes the natural color of the meat to be retained. Shipments will be made to Hawaii and New York if the market develops.

Speak at Fur Farmers Meeting.--Dr. John K. Loosli, until recently in charge of the cooperative nutrition studies of fur animals at Cornell University, and Dr. Robert K. Enders, in charge of the Bureau's embryological investigation of fur animals, Swarthmore College, spoke about their studies at the New York State Fur Farmers Association meeting in Syracuse, N. Y., on September 15 and 16. According to reports, many favorable comments were made upon the quality and the extensiveness of the Bureau's work along these two lines.

Supplies Rabbits for Quality Meat Investigations.--The rabbit station shipped one buck and two New Zealand white does to the Division of Animal Husbandry, Bureau of Animal Industry, Beltsville, Md., on August 20. These animals are to be used as stock to grow rabbits for a study of the inheritance of quality in meat. The Section of Fur Resources was instrumental in supplying the Division of Animal Husbandry with information that enabled the Division to obtain a dozen different strains of rabbits from various parts of the United States.

Disease Control

Septicemia Strikes Deer.--During the period of September 6 to 12, inclusive, Dr. J. E. Shillinger and Dr. Don R. Coburn were in North Carolina conducting studies on the losses encountered among the deer on the Pisgah and Nantahala National Forests. The outbreak had begun several weeks previous, and in the aggregate it is estimated that about 200 animals were lost on the two areas. Unfortunately the infection had also become established in the fawn-rearing plant on the Pisgah where the Forest Service had had a very successful season prior to this epizootic. Investigations made by Dr. Shillinger and Dr. Coburn and independent studies made by local veterinarians and the laboratory staff of the Veterans' Administration at Oteen, N. C., show that the infection was hemorrhagic septicemia.

Recommendations that the fawns be given a repeat treatment of potent vaccine, where they can be handled in the rearing pens, and the elimination of salt licks where the animals are likely to congregate were made. The last report from the U. S. Forest Service staff at Asheville, N. C., as well as from the State game officials, indicate that the losses have subsided.

Visits Washington Office.--While on vacation in the East Dr. Edward L. Vail, whose official station is Los Angeles, Calif., came to Washington and spent September 14 and 15 in the offices of the Bureau and in the laboratories of the Section of Disease Control. In addition to conferences with the staff he visited the Patuxent Research Refuge and inspected the new laboratory under construction. The staff discussed the newer developments on research on diseases of fur animals and Dr. Vail's report on some of his latest findings on myxomatosis in rabbits.

Equip Laboratory.--Important pieces of laboratory equipment for the disease research laboratory at Pullman, Wash., under the direction of Dr. Frank D. McKenney, are being installed. With the development of this branch laboratory for studies on diseases of fur animals, numerous requests for assistance and cooperation are being received from fur producers in the Northwestern States. The laboratory is apparently filling an important need in that part of the country, Dr. Shillinger said.

FEDERAL AID IN WILDLIFE RESTORATION

Hold Conference of Inspectors.--The first conference of the regional inspectors of the Division of Federal Aid in Wildlife Restoration was held in Washington from August 28 to September 2. Progress during the first year of the Federal Aid program was discussed, and present and future problems covering the entire field of cooperation were considered. Open discussion of particular problems that occupied a large portion of the time developed definite Division policies and procedure.



Mr. Henderson and Mr. Dillon spoke on Bureau responsibilities and problems. Dr. Bell, Dr. Jackson, and Mr. Dieffenbach spoke to the group on matters of mutual interest. Ernest Holt and Dr. William R. Van Dersal, of the Soil Conservation Service, William A. Minor, Jr., of the AAA, and John Hatton, of the Forest Service, outlined what their agencies are doing in the interest of wildlife, thus enabling the field representatives of the Federal Aid Division to obtain a more comprehensive knowledge of the ramifications of wildlife problems and what is being done by other agencies to further wildlife restoration work.

Visits Lake and Plain States.--Mr. Day left Washington September 23 for a field trip through the Lake and the northern Plain States. He will attend meetings of several game commissions and also confer with Bureau regional directors and inspectors.

Inspects Western Projects.--J. Paul Miller is engaged in an extended inspection of active and proposed Federal Aid projects through the West and Southwest.

Returns from New England.--R. M. Rutherford returned September 22 from a trip through Region 8, where he inspected Federal Aid projects now in operation and met with game commissions of the various States in the region.

Meet with Conservation Commission.--Mr. Day, accompanied by Melvin O. Steen, regional inspector for regions 4, 6, and 9, attended a meeting of the Ohio Conservation Commission at Sandusky and Cedar Point, Ohio, on September 12 and 13. They report a lively consideration of that State's restoration problems and that the commission is preparing worthwhile wildlife activities.

Visits W. Va. Director.--On a recent field trip Mr. Day discussed Federal Aid activities with Major H. W. Shawhan, director of conservation of West Virginia. A well-balanced wildlife restoration program is in progress in that State, Mr. Day reports.

Accounting Systems Expedite Work.--Howard B. Leach, traveling auditor and accountant, returned to Washington on September 1 from a month's auditing trip through the West and Southwest. He reports that the States are rapidly establishing cost accounting systems that will permit prompt reimbursement to them from Federal Aid funds for their expenditures on approved projects.

Testifies in Florida Courts.--Fred R. Kessler, associate acquisition specialist, spent several days in Tallahassee, Fla., during the September term of Federal Court. Several of the Bureau's land acquisition cases required his testimony on land values.

Transport "Nuisance" Beavers.-- Arizona farmers have reported damage by beavers in the low altitude streams and irrigation canals. Higher altitude streams are, in many instances, understocked in these localities and beaver dams would aid in controlling soil erosion, floods, water conservation, and would provide a valuable fur resource, as well as improve the fish carrying capacity of the streams.

To eliminate damages and to utilize the animals in restoration and conservation work, the Arizona Game and Fish Department submitted a project for the live-trapping and transportation of nuisance beavers to selected sites where they will not interfere with agricultural pursuits. Approval was accorded August 9.

Arizona Moves Surplus Quail.--In certain localities in the southern part of Arizona farmers are complaining that Gambel quails are so abundant that they are destructive to agricultural crops. The farmers have asked the State Game Department to correct the situation.

At the same time many potentially good quail ranges in other parts of the State are now underpopulated.

To remedy these conditions the Arizona Game and Fish Department received approval on August 9 to use Federal Aid funds to trap surplus quails in the overpopulated locations and move them to the areas now understocked. By agreements with land owners, the areas where the quails will be released are to be established as refuges for a period of at least 2 years. At the end of that time it is expected that population increases will provide a surplus that may be hunted.

Pheasants for Arizona River Valleys.--A small-scale experiment with the establishment of ring-necked pheasants on a few promising areas in the irrigated valleys of the Gila, Salt, and Verde watersheds in Arizona will be conducted by the State Game and Fish Department.

Environmental and ecological conditions will be carefully investigated before selecting the experimental areas, and plantings will be made only where landowners agree to cooperate in developing adequate food and cover and in helping to protect the birds.

Through the cooperation of farmers and sportsmen it is hoped that within a few years a huntable surplus of these desirable game birds will be available in these irrigated valleys. The project was approved August 9.

Colorado Buys Winter Range for Deer.--Some 640 acres of excellent winter deer range in Rio Blanco County, Colo., will be purchased by the State Fish and Game Department with a portion of their Federal Aid funds.

The tract surrounds the junction of two good-sized streams, which assures an abundant water supply for the animals. In the past some of the water has been diverted to irrigate hay meadows on the unit, and it is planned to continue this practice. Part of the hay crop will be harvested and stored for emergency feeding of the deer. Grazing of domestic stock on the area will be controlled. The unit is considered to be key property in providing an adequate winter range in one of the best deer producing areas in the State.

Illinois Surveys Restoration Areas.--The lack of suitable work and study areas in the prairie section of Illinois has seriously handicapped wildlife managers and investigators in determining the nature and best means of combatting limiting factors. Control of satisfactory study plots is planned by taking long-term easements from interested and cooperative landowners.

A project for a survey to determine and select scattered holdings valuable for conducting these necessary studies of limiting factors, habitat restoration, and management problems was submitted by the Illinois State Department of Conservation and was approved on September 20. The Natural History Survey Division of that department will conduct the investigation.

Maryland Acquires Upland Game Refuge.--The Maryland State Game and Inland Fish Commission on September 23 received approval to use Federal Aid funds for the acquisition of an upland game refuge area to be known as the Indian Springs Game Refuge. The area, comprising 1,206 acres formerly utilized as two farm units and improved with three sets of farm buildings, lies in Washington County in the heart of the Shenandoah Mountains game region. Including agricultural, well-fenced grazing, and cut-over mountain timber lands, and several apple and peach orchards, it is crossed by a mountain stream and is accessible by a hard-surfaced road.

When developed and in operation, the refuge will afford good haven for deer, wild turkeys, ruffed grouse, bobwhite quails, cottontail rabbits, and squirrels.

Carolina Expands Holly Shelter.--To provide both highway and water access to the 90,000-acre Holly Shelter Wildlife Refuge, the North Carolina Department of Conservation on September 26 received approval to use Federal funds to purchase about 2,000 acres more.

The value of the land already owned depends on better approaches, the lack of which has heretofore prevented the proper development and use of the lands as a wildlife area. This acquisition, which is now crossed by a usable county road, will extend the refuge to the Northeast Branch of the Cape Fear River.

Improve Cedar Lake, N. Dak.--Federal Aid in Wildlife Restoration funds will be used by the North Dakota State Game and Fish Department to develop the Cedar Lake Refuge in the southwestern portion of the State. Waterfowl, Hungarian partridges, sharp-tailed grouse, and pheasants occur on the refuge, and improvements will be made so the area will provide a better habitat for wildlife. The project was approved August 11.

Trees and shrubs will be planted to provide food and cover and to control wind erosion. Fire hazards will be reduced by fire breaks, and the man-made Cedar Lake will be planted with native aquatics to provide food for waterfowl.

Develop State Refuge.--The North Dakota State Game and Fish Department will use a portion of its Federal Aid funds for a project, approved August 8, on the Dawson Refuge in the south-central part of the State,



east of Bismarck. The State plans to improve food, water, and cover conditions for pheasants, sharp-tailed grouse, Hungarian partridges, and waterfowl.

Work to be accomplished includes fencing to exclude livestock, construction of a combination equipment shed and barn at refuge headquarters, preparation and planting of food and cover plots that will also serve as wind breaks, drilling of three wells to supply water for wildlife, and the construction and erection of wooden signs.

Oklahoma Studies its Resources.--A portion of Oklahoma's Federal Aid funds will be used for a study of the State's wildlife resources. The results of the study, which was approved on September 1, will be the basis of a comprehensive restoration and management program. Three years will be required for this project, the first being given over almost exclusively to a survey of the resources, which will include preparation of a cover-type map of the State, ascertainment of the relative abundance of important game and fur animals, and determination of measures to overcome limiting factors.

Based on the findings of the first year's study and while continuing the resources investigation studies, greater emphasis during the second and third years will be directed towards actual restoration and initiation of planned management practices.

Lyle F. Selko, project leader, will be assisted by two field biologists and two assistant biologists. Technical direction will be by the Department of Zoology, Oklahoma A & M College, while general cooperation will be accorded by other Federal, State, or local agencies.

Pennsylvania Will Develop Experiment Station.--Fifty Acres of a farm owned by the Pennsylvania Game Commission in Lycoming County have been set aside as a wildlife experiment station. A set of farm buildings, including a stone house, constitute the present improvements on the tract. Repairs to these buildings will be financed with Federal Aid funds and include installation of water, heating, and electrical systems as well as the construction of animal holding pens. The project, approved September 15, is considered necessary for proper use of this station, which will be devoted to research in the nutritive and disease-control needs of wildlife common to the State.

Texas Develops Quail Habitat.--The Texas Game, Fish, and Oyster Commission has found the principal limiting factor to natural propagation of the various species of quails throughout most of the State to be lack of proper food and cover. This deficiency is largely caused by overgrazing and intensive farming practices.

The Commission plans to minimize this limiting factor by leasing private lands now deficient in food and cover with the understanding that the areas must first be properly developed by the owners to improve this situation. A Federal Aid project providing cooperation in this activity was approved on September 2. Lands will be fenced and posted as refuges. Grazing will be prohibited, and suitable plantings made. By this means adjacent and surrounding areas will yield better hunting possibilities, and the developed areas will serve as demonstrations to landowners in the techniques of good quail management.

Hunting will be prohibited for the lease period of 3 years and during the time investigations and reports on habitat relations to populations of quails will be made.

Utah Buys Key Tract for Waterfowl Refuge.--Lands comprising the bed of Provo Bay in Utah Lake have been judicially determined to belong to the State of Utah as "a trust for all the people \*\*\* which neither the legislature nor land board can alienate, lease, encumber, or otherwise abridge, and that the rights of all the people to enjoy the same equally must forever remain inviolate." Fluctuation of the water level causes these lands to become inundated or practically dry, according to the season, resulting in much "duck sickness" and the consequent loss of large numbers of migratory waterfowl.

By purchasing 25.52 acres of land along the meander of the upper bay, the State is acquiring a fresh water appropriation of 3.41 second feet. This acquisition will permit the development of a good duck marsh in a portion of the bay held by the State as a trust and, according to the State Fish and Game Commission, will do much to eliminate the unhealthy conditions now prevailing for migratory waterfowl. Subsequent development of the area with the use of Federal Aid funds to effect such improvement is planned by the Utah Fish and Game Commission. A project providing for purchase of the small tract of land and the important water right was approved on September 15.

West Virginia Posts Six Refuges.--The West Virginia State Fish and Game Department received approval on August 24 for a project calling for the purchase of 5,000 metal signs to be used in marking 177 miles of boundaries on six State Refuges. Metal signs are considered superior by the Department because of their permanency and legibility. The posters will be placed at intervals of 150 to 200 feet and will inform the public that the wildlife on the areas is not to be disturbed.

Will Restock West Virginia Lands.--Sixty-four percent of West Virginia is forest or potential forest land. Previous extensive logging operations and fires have provided favorable deer habitat on a large portion of the existing wild lands. Unfortunately the white-tailed deer population has been so reduced in some localities as to make it advisable to restock some areas to provide reproduction compatible with the available food supply and carrying capacity.

The West Virginia Conservation Commission submitted a Federal Aid project to restock areas in six counties where such action is needed. Approval was granted on September 26. The lands where releases are made will be closed to hunting and remain closed until the increment merits cropping, after which restricted hunting amounting to the taking of the annual increase will be permitted.

Wyoming Buys Elk Feeding Ground.--A proposal submitted by the Wyoming Game and Fish Commission for the purchase of 160 acres for a winter feeding ground for elk on the Gros Ventre River in Teton County, utilizing Federal Aid in Wildlife Restoration funds, was approved on September 9.

Although the Grös Ventre region contains some of the best winter range in the State, the elk face starvation unless supplied with extra feed during the unusually long, hard winters that occur periodically. The area to be purchased under this project will serve as an emergency feeding station to alleviate such suffering.

The tract will be developed as a pasture and storage area for winter feeding purposes. The land will be fenced, metal storage bins constructed, and its pasture and meadow lands improved by seeding and irrigation.

Personnel.--William J. Howard, formerly associate regional inspector for Federal Aid projects in Regions 5 and 7, with headquarters in Atlanta, Ga., was transferred to the Washington office on September 13. In his new assignment as associate biologist, Mr. Howard will be assistant in charge of the Section of Program Planning. Prior to his association with the Bureau he had wide field experience in forestry and game activities with the National Park Service.

Mrs. Imogene J. Ayer transferred from the AAA to this Division as assistant clerk-stenographer in the Section of Apportionment and Estimates.

#### LAND ACQUISITION

Two Commission Members Die.--Death has changed the personnel of the Migratory Bird Conservation Commission twice during the past summer. Honorable Sam D. McReynolds, of Tennessee, who was the Democratic member from the House of Representatives since the Commission was first formed, died in the closing days of Congress. Honorable Thomas S. McMillan, member from South Carolina, was appointed to fill this vacancy. Mr. McMillan died suddenly at his home in South Carolina at the end of September. As yet, the new member has not been appointed.

Inspects Western Areas.--Mr. Dieffenbach left Washington on September 21 to inspect proposed and existing refuge areas in California, Colorado, and Utah.

#### Appraisals and Negotiations

Examines Florida Sites.--Earl F. Gates, senior acquisition aide, who went to Florida in August to examine proposed refuge sites in the Tampa area, has moved to other points in the State for the same purpose.

Visits Refuges.--Elmon Radway, assistant land valuation engineer, left Washington early in September for negotiative work on the Montezuma Migratory Waterfowl Refuge, N. Y., and the Moosehorn Migratory Waterfowl Refuge, Maine.

#### Legal Section

Study Land Records.--Jesse L. Brightwell, attorney, traveled to Seneca Falls and other points in New York during September to obtain necessary curative material for case closures on the Montezuma Migratory Waterfowl Refuge.



During September Joseph S. Needle, associate attorney, was in New Jersey and Pennsylvania examining title records in connection with the Brigantine Migratory Waterfowl Refuge, N. J. He also went to Maine to examine records of the Moosehorn Migratory Waterfowl Refuge.

#### WILDLIFE REFUGES

Visits Refuges in 12 States.--Mr. Elmer returned August 28 from an inspection trip to refuges in Michigan, Minnesota, North Dakota, Montana, Washington, Oregon, Idaho, Wyoming, South Dakota, Nebraska, Missouri, and Kentucky. He states that he was very much impressed with the conditions of the refuges and with the progress that has been made since he last visited them in 1936.

Precipitation on Refuges Varies.--The climatic variations under which the refuge system operates is indicated by a comparison of rainfall received during the quarterly period, May through July. The least precipitation was on the Minidoka Refuge, Idaho, which had .41 inches. The Deer Flat Refuge, Idaho, had 1.01 inches; Tule Lake Refuge, Calif., 1.32 inches; Lacreek Refuge, S. Dak., 7.65 inches; Aransas Refuge, Tex., 10.01 inches; and Okefenokee Refuge, Ga., 17.27 inches.

Inspects Engineering Work in Region Seven.--Wm. V. Taylor, of the Section of Structures, returned September 19 from a 2 weeks' tour of inspection of the engineering work on the Blackwater, Back Bay, Pea Island, Mattamuskeet, Cape Romain, Savannah River, Blackbeard Island, St. Marks, and South Carolina Sandhills Refuges. He was accompanied by Warren E. Hall, formerly district engineer in charge of the engineering work on the Atlantic Coast refuges.

Successful Nesting Season Reported.--More ducks nested on the Sacramento Migratory Waterfowl Refuge, Calif., this year than last, according to Refuge Manager Peter J. Van Huizen. Although this refuge is not primarily a nesting area, 175 pairs of mallards, 12 of cinnamon teals, 66 of pintails, 19 of redheads, about 20 of shovelers, and 6 of Florida gallinules nested this year. A large increase in the number of breeding black-necked stilts was also noted: this year 100 pairs nested as compared with 4 pairs last year. Black and Forster's terns nested there for the first time since the refuge was established. Mr. Van Huizen estimated the nesting population of black terns to be at least 50 pairs, while Forster's terns were found on 29 nests.

Islands Choice Resting Places.--Mr. Van Huizen reports that during the migration period whenever he observed the islands in one of the pools on the refuge, they were so covered with birds that no ground could be observed. The graveled dikes around the pools also were favorite resting places for both ducks and geese.

Artesian Wells Dug at Bombay Hook.--Two artesian wells have been dug on the Bombay Hook Refuge, Del., according to Refuge Manager John F.

Herholdt. These wells, drilled in the salt marshes, are situated adjacent to mud flats and brackish pools and are expected to aid materially in supplying fresh water for these areas. One of the wells, dug to a depth of 312 feet, yields a flow of 57 gallons a minute, and the other, 356 feet deep, has a flow of 21.4 gallons a minute.

Deer Flat Buildings Made of Lava.--In keeping with a plan to utilize native materials for refuge buildings wherever possible, the headquarters buildings at the Deer Flat Refuge, Idaho, have been constructed with lava veneer on the outer walls. This material is easily obtained locally and is available in practically any size or shape desired. Refuge Manager Ralph C. Winslow reports that the headquarters buildings have recently been completed, together with walks, a flagpole, and an irrigation system for the grounds. It is said that this is one of the best residences on a Survey refuge.

Boats Constructed at Delta Refuge.--During the past summer, the hulls of a 20-foot fast-utility boat and a 17-foot fast-utility boat were constructed on the Delta Refuge. The hull and motor of the boat "Sora" were reconditioned and the boat put into service. Since all transportation to and within the refuge is by boat, these additions to the floating equipment greatly facilitate the administration of the refuge, Refuge Manager John D. Kilby states.

Alligators on Lacassine.--Alligators are quite common on the Lacassine Refuge, La., at the present time. Most of the individuals seen are either very large or very small, the intermediate-sized alligators having been practically eliminated by hunters prior to the establishment of the refuge.

Shovelers Nest on Seney.--Refuge Manager C. S. Johnson, of the Seney Migratory Waterfowl Refuge, Mich., reports that shoveler ducks, which during the spring migration this year stopped on the refuge for the first time since its establishment, also nested on the area. A nest of 10 eggs was discovered, and all the eggs hatched. Mr. Johnson states that this is not only the first nesting record of this species for the refuge, but for the entire Upper Peninsula so far as he has been able to determine.

Squaw Creek Refuge Popular with Fishermen.--More than 500 fisherman were at the Squaw Creek Refuge, Mo., on the first day the area was open to fishing, according to Percy L. DeFuy, refuge manager. Many fish were caught, he reports, most of them being bullheads, carp, crappies, and sunfish.

Work Nears Completion on Montana Refuges.--By the end of June little WPA development work remained to be finished on the several Montana refuges on which this type of labor was engaged, State WPA Supervisor Kenneth F. MacDonald reported. At the Nine-Pipe Refuge the residence, service building, an observation tower, and the landscaping have been

completed. The construction of an 8,200-foot diversion ditch from Willow Creek to Lake Mason remains as the principal development on the Lake Mason easement refuge. The 40-foot rubble masonry spillway has been completed between Grassy and Mud Lakes on the Greedmans Coulee Refuge near the Canadian line. Headquarters buildings on the Fishkum Refuge have been completed except for the service building.

Greese Feed on Pablo Wheat Crop.--By the time the combine used in harvesting the wheat planted on the Pablo Refuge, Mont., had made only three rounds, Canada geese began to feed in the stubble, Refuge Manager George L. Girard said. More than 2,300 bushels of wheat were harvested, of which 800 were stored for use on the National Bison Range. Several patches were left uncut near the upland game shelters for the use of the birds.

Trumpeter Swans Increase.--At least 199 trumpeter swans are in the United States today. This encouraging report was received from Archie V. Hull, refuge manager of the Red Rocks Lakes Refuge, Mont., who conducted this year's count of the trumpeter swans on the refuge and adjacent lakes and in Yellowstone National Park. Fifty-nine cygnets and 50 adults were counted on the refuge proper, 20 adults and no cygnets on the lakes adjoining the refuge, and 17 cygnets and 53 adults in Yellowstone Park--a total of 76 cygnets and 123 adults for the entire region, or 199 birds. Last year's count revealed 93 adults and 55 cygnets, a total of 148 individuals. The highest previous count was in 1937 when 81 adults and 77 cygnets, a total of 158 birds, were counted.

Mule Deer Numerous on Charles Sheldon.--E. R. Sans, superintendent of the Charles Sheldon Antelope Refuge, Nev., reports that though only one doe mule deer was seen on the area in 1925, approximately 200 are on the refuge now. On both the refuge and range there are more than 2,000 deer, he states.

Fish Hatchery Planned for Ruby Lake.--A special-use permit has recently been issued to Elko County for the construction of a fish hatchery on the Ruby Lake Refuge, Nev. This hatchery, to be operated on a cooperative basis with the U. S. Bureau of Fisheries, is expected to produce a million rainbow and eastern trout each year. The county will assume responsibility for the distribution of the fish.

Gulls and Terns Abundant on Pea Island.--An increase in the number of gulls and terns nesting on the Pea Island Refuge, N. C., occurred this year for all species except the laughing gull and royal tern, Refuge Manager S. A. Walker reports. The total number of nesting pairs this year was as follows: Black skimmers, 600; laughing gulls, 1,200; common terns, 1,200; royal terns, 50; least terns, 400; and gull-billed terns, 40. A man-o'-war bird and seven marbled godwits were seen on the refuge for the first time since its establishment.



Des Lacs Has Successful Nesting Season.--Refuge Manager Seth Low, of the Des Lacs Refuge, N. Dak., estimates that about 50,000 ducks were hatched on the area this year. The most abundant nesting species were pintails, shovelers, gadwalls, blue-winged teals, and baldpates. Green-winged teals nested in larger numbers than ever before, Mr. Low said. Not many diving ducks nested on the sanctuary, but several broods of canvasbacks, redheads, lesser scaups, and ruddy ducks were observed. The Lostwood Refuge also had a successful nesting season, the best since the establishment of the refuge. Forster's terns nested on the latter area for the first time since the Survey administered the area.

Coots Plentiful on Lower Souris.--An estimated population of 100,000 coots were on the Lower Souris Migratory Waterfowl Refuge, N. Dak., on September 1, according to Refuge Manager C. J. Henry.

Shorebirds Numerous on Aransas.--Twenty-eight species of shorebirds have been noted on the Aransas Refuge, Tex., according to Refuge Manager James O. Stevenson. Sixteen of these species were recorded during the winter months. Long-billed curlews occur as resident birds but apparently do not nest on the area. Marbled godwits and avocets have been seen several times, and one Hudsonian godwit was noted. Large flocks of stilt sandpipers were seen during the first week of May, and about 50 white-rumped sandpipers were noted during that month. Baird's sandpiper, rare in Texas, was observed on several occasions, Mr. Stevenson said.

Aransas Has Large Deer Herd.--During an hour and forty-five-minute drive from the headquarters to the west side of the Aransas Refuge on August 2, Mr. Stevenson counted 233 deer. Of these 125 were does, 45 were fawns, and 63 were bucks. About 3,500 deer are estimated to be on the refuge.

Unusual Annual Report Received.--The 1939 annual report from the Upper Mississippi Refuge, Minn., contains an unusually interesting photographic record of water and wildlife conditions on the 284-mile long refuge. Photographs are used to excellent advantage to show nesting black-crowned and great blue herons, the downy young of red-shouldered hawks, the rescue of a deer stranded on the ice after losing its footing, and typical marsh and upland vegetation. A series of 16 photographs present the nesting story of three pairs of American egrets on the Wisconsin side of the refuge, which is believed to be the most northerly breeding place of this species in the Mississippi Valley in recent years. Aerial views of the newly-created marshlands on the refuge as a result of the nine-foot canalization of the river are also included.

Elk Refuge Gets New Buildings.--A new residence, service building and garage, office, and bunkhouse are soon to be constructed on the Elk Refuge, Wyo., under a Bureau-sponsored State WPA project. Logs to be used in the construction of these buildings were cut, peeled, and decked out for drying by WPA workers last winter.

CONSTRUCTION AND C.C.C. OPERATIONS

Makes Field Trip.---H. W. Terhune left for Milwaukee, Wis., on September 24 to confer with C.C.C. Inspector Walter E. Vroman on matters pertaining to the establishment of new camps in the Middle West. He returned to the Washington office on September 27.

Visits Washington.---Wilfred J. Gregson, C.C.C. inspector in Region 7, arrived in the Washington office on September 15 to discuss camp operations in his territory. Mr. Gregson returned to the Atlanta office on September 19.

New Camps for Survey.---Five new 14th-period camps will be established by the Bureau between October 1 and November 1 to carry on C.C.C. development work on as many wildlife areas. The new camps are: Camp BS-1, Wheeler Pool, Ala.; Camp BS-2, Brigantine, N. J.; Camp BS-3, Rice Lake, Minn.; Camp BS-2, Wecedah, Wis.; and Camp BS-2, Bosque del Apache, N. Mex. Four 13th-period Bureau camps to be closed sometime during the month of October are: Camp BS-2, Cape Romain, S. C.; Camp BS-1, Tuckahoe, N. J.; Camp BS-3, Lacreek, S. Dak.; and Camp BS-2, Valentina, Nebr. Camp BS-2, Sand Lake, S. Dak., was closed on August 1.

A camp was originally scheduled for establishment at Ruby Lake, Nev., but will not be occupied until the 15th period because the road leading to the camp site is in poor condition. This road is now being repaired and will be ready to use when the camp is established.

Have No Accidents During Year.---On September 12 Bombay Hook Camp BS-1, Del., held a safety celebration to mark the close of a year during which there was not a single lost-time accident.

Rae A. Kneeshaw, camp superintendent, and Lieut. Robt. C. McKechnie, company commander, received telegrams of congratulation from Robert Fechner, director of the C.C.C.; Conrad Wirth, who represents the Department on the C.C.C. Advisory Council; the Army District Commander; Governor McMullen, of Delaware; and Mayor Woodford, of Dover, Del. Major John J. Nealon, of the Army District Headquarters in Trenton, N. J., gave the principal talk of the evening. A special turkey dinner was served at the camp as part of the celebration. The Washington office was represented by C. W. Teckemeyer.

Inspects Refuges in Region 8.---Mr. Teckemeyer left on September 12 for an inspection trip through Region 8. He visited the camps at the Bombay Hook, Tuckahoe, Moosehorn, and Montezuma Refuges and visited the regional office in Boston, the Second Corps Area headquarters, Governors Island, N. Y., and the C.C.C. central repair shop at Schenectady, N. Y. Mr. Teckemeyer returned to Washington on September 23.

Boys Set Up Radio Station.---The following items taken from a recent issue of Happy Days, a weekly newspaper for the C.C.C., concern Camp BS-1, Maine:

"Ayers, Me.--Co. 1129 has begun a series of courses which will culminate in actual radio transmission from the camp. Enrollee Eugene Roberts, licensed operator, is conducting two courses in radio theory and code practice. There is widespread interest through the camp in learning radio technique and a number of enrollees are interested in obtaining transmitting licenses. After the technical difficulties presented by DC current are mastered a transmitting station will be set up and radio construction and transmission instruction will be available for the entire company.

"The camera class has 18,000 acres of finest game and bird preserve for its snapshot laboratory. Besides deer, several of which are seen on the road daily, there are bears and porcupines in the vicinity and a variety of game and forest birds. A series of camera hunts into the woods, during which moving pictures will be taken to supplement the still shots of natural life, have been planned by the education advisor. The first trip of the Moosehorn camera class was to the Passamoquoddy Dam site near Eastport. The most popular camera subject was the large mechanical model of the proposed Quoddy dam."

Enrollees Good Fire Fighters.--The September 23 issue of Happy Days reports the part played by Pea Island Camp BS-2, N. C., in the recent Manteo fire as follows:

"Manteo, N. C.--C.C.C. men of Co. 436 turned out 180 strong and saved Manteo from destruction by the worst fire in the town's history. It broke out at 5 o'clock in the morning and some of the enrollees still were on the job the next morning. The loss was estimated at \$250,000. Starting in an oil house in a Standard Oil Co. yard, the fire rapidly spread following explosions of oil tanks. The inhabitants were panic stricken. The fire was out of control of the inadequate local fire department.

"The C.C.C. men came with trucks and under direction of foremen and officers went to work. Some helped the firemen, others formed bucket brigades, others began removing tons of furniture, hardware, groceries and dry goods from the stores.

"The U. S. Post Office was one of the buildings burned. Here many men worked all day and night restoring facilities so the mails would not be interrupted.

"One 70 year old woman was rescued by enrollees from the upper porch of her home which had been surrounded by fire spread by exploding oil tanks. The firefighters had to keep themselves drenched in water to get close enough to the fire to fight it. Fifty C.C.C. men were sworn in as police officers and stood guard over the ruins to protect the property from curious spectators. Fire fighting equipment from two adjoining cities was called to help control the fire which would have destroyed the whole town but for the work of the C.C.C. forces. Citizens of Manteo were high in their praise of their work."



## GAME MANAGEMENT

Deputies From 4 States Meet.--At the invitation of Game Management Agent Lee F. Brackett, about 50 U. S. deputy game wardens from Massachusetts, New York, Rhode Island, and Connecticut attended a game conference in the State Capitol at Hartford, Conn., on September 9.

Mr. Leichhardt explained the new regulations and the methods of enforcing them, and Regional Director Locke told of the Bureau's activities in Region 8. Deputy Warden Rose discussed the rights of the officer and of the public in searches and seizures. Dr. Greene vividly pictured the loss of waterfowl by oil pollution in coastal waters. Dr. Hunter, superintendent of the Connecticut Board of Fisheries and Game, and Messrs. Lay and Merrill, of the Survey's Predatory Animal and Rodent Control Division, spoke on their respective work. After an open discussion on game laws and allied subjects led by Agent Brackett, the program was concluded with the showing of wildlife motion pictures.

Pay \$400 for Elk, Lose It.--Three men, apprehended in Oregon on September 3 by a U. S. deputy game management agent for killing an elk during close season, were found guilty in State court at Astoria on September 5. One was fined \$200 and costs of \$4.50. The others were each fined \$100 and costs of \$4.50. The elk was confiscated.

## PREDATOR AND RODENT CONTROL

Returns from Field.--On September 18 Mr. Green returned from a field inspection trip through North Carolina, Georgia, Mississippi, Texas, New Mexico, Arizona, California, Nevada, Oregon, Idaho, Utah, Wyoming, Colorado, and Nebraska. He contacted the Division's personnel in these States and conferred with various cooperating agencies.

During the Labor Day week-end Mr. Green inspected the Charles Sheldon Antelope Refuge, Nev., and the Hart Mountain Antelope Refuge and Malheur Migratory Bird Refuge, Oreg. He reports an abundance of coyotes on these areas, which is substantiated by the fact that in August 28 coyotes were shot on the Charles Sheldon Refuge and 127 were trapped on the Malheur Refuge. He saw several coyotes while inspecting these areas.

At Pocatello, Idaho, Mr. Green inspected the new addition to the Bureau's supply depot and laboratory. This addition is almost completed, he reports. The W.P.A. project for the completion of this work started operations on September 5.

Pocket Gophers in Texas.--A progressive farmer of Marion County, Tex., reports that 55¢ worth of material for the control of pocket gophers freed his 3-acre farm of gophers. Now this plot produces from 75 to 80 bushels of peanuts, whereas before control was instituted the area produced only 35 to 40 bushels.

Clear Slums of Rats.--According to District Agent C. R. Landon the Texas district office cooperated with the Federal Housing Administration on a slum improvement project in San Antonio, Tex., by exposing

2,650 pounds of bait in the old houses that were to be wrecked. To prevent reinfestation, rodent-control measures were also taken on the area surrounding the project territory. After the baiting, no live rats could be found, Mr. Landon said, and 15 days later another survey disclosed that 86 percent of premises reported complete eradication, 8 percent partial eradication, 2 percent reported little difference, and 2 percent no difference. Two percent reported neutral results, stating there was no infestation before the campaign started, and none after the campaign.

Agent Appointed in New Mexico.--Effective June 29, Edward C. Cates was appointed district agent of the New Mexico district, succeeding John C. Gatlin, who was appointed Regional Director in Region 3 on June 28. Mr. Cates has had several years' experience as assistant district agent in the New Mexico district under the supervision of Mr. Gatlin. He was first employed by the Bureau in Montana on April 1, 1926.

# THE SURVEY

ISSUED MONTHLY FOR THE PERSONNEL, BUREAU OF BIOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF THE INTERIOR,  
CREDIT FOR MATTER REPRINTED FROM THESE PAGES SHOULD BE GIVEN TO THE BIOLOGICAL  
SURVEY AS A BUREAU, NOT TO "THE SURVEY" AS A PUBLICATION

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Washington, D. C., October 1939

No. 10

## GENERAL NOTES

Spends Month in Field.—On September 10, Dr. Gabrielson left on a field trip, during which he visited the Portland, Denver, and Des Moines offices and various refuges, including Little Pend Oreille and Turnbull Refuges, Wash.; Malheur and Hart Mountain Refuges, Oreg.; Charles Sheldon Refuge and Desert Game Range, Nev.; and Sacramento Refuge, Calif.

Bureau Worker Goes to South Pole.—A representative of the Biological Survey will be on board when the Antarctic Expedition led by Admiral Richard E. Byrd heads for the South Pole early next month. Jack E. Perkins, junior biologist, was transferred from duties at the Sabine Migratory Waterfowl Refuge, La., and assigned to accompany the Byrd expedition with a view towards collecting specimens and whatever data he can obtain on the flora and fauna observed in the Antarctic region.

Carl R. Eckland, who from October 1937 to July 1938 served as junior biologist with the C.C.C. camp stationed at the Seney Migratory Waterfowl Refuge, Mich., is also a member of the expedition. In 1936-37 he did research work as a member of the Oregon Cooperative Wildlife Research Unit.

Mr. Perkins was transferred from the Division of Wildlife Refuges to the Division of Wildlife Research for the duration of his work with the expedition. His scientific work is under the immediate direction of Dr. Bell. Mr. Perkins will collect plants, birds, or mammals and other biological specimens; observe the food habits of animals; cooperate in aerial biological studies; and band birds that may be trapped.

Three other biologists are included in the personnel assigned to the expedition: One each from the Smithsonian Institution, the Bureau of Fisheries, and the National Zoological Park.

Mr. Perkins joined the Survey in October 1938 as a student assistant assigned to the Delta Migratory Bird Refuge, La. He remained there until May 1939, when he received his appointment as junior biologist in the Division of Wildlife Refuges and was transferred to the Sabine Refuge. In the summer of 1937, before coming to the Survey, Mr. Perkins worked for the National Park Service as a temporary ranger on Yosemite National Forest. While at Tulane University, where he received his B. S. degree in botany, he held an appointment for 3 years as a botany laboratory assistant.

Being particularly interested in photography, Mr. Perkins, in preparation for his 2-year absence, included his miniature camera and many films in his personal baggage. He hopes to obtain a full photographic record of wildlife and landscape scenes.



## ADMINISTRATION

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (AFO) series since the last issue (September) of the Survey.

- No. 21. Revised. Amendment No. 12. Instructions in the preparation of specifications. (September 26.)
- No. 219. Amendment No. 1. Emergency field printing. (September 27.)
- No. 283. Transfers of predatory-animal hunters from cooperative to Federal funds for periods of six months or less. (September 22.)
- No. 284. Inquiries regarding CCC employment. (October 6.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 89. Supplement No. 2. Amendment No. 2. Contracts for gasoline and lubricating oil, service-station deliveries only. (September 25.)
- No. 89. Supplement No. 3. Contracts for service-station deliveries of gasoline and lubricating oil for the period July 1, 1939, to June 30, 1940, inclusive. (September 22.)
- No. 89. Supplement No. 4. Contracts for service-station deliveries of gasoline and lubricating oil in the States of Georgia and Florida, for the period ending December 31, 1939. (September 27.)
- No. 93. Amendment No. 1. Procurement of special lubricating oils for diesel-powered equipment. (September 22.)
- No. 100. Changes in Procurement Division Contracts. (September 21.)
- No. 101. Supersedes No. 43 and Amendment No. 1 thereto. Mandatory contracts for the procurement of batteries, battery equipment and parts, and automatic battery fillers and parts therefor
- No. 102. Mandatory contracts for the procurement of electric fans (Class 17, Supplement No. 1). (September 25.)
- No. 103. Supersedes No. 46, dated September 15, 1938. Mandatory contracts for the procurement of incandescent electric lamps, including lamps for motor vehicles and flashlights (Class 17, Supplement No. 3). (September 25.)
- No. 104. Mandatory procurement of safety cans (Class 42). (September 23.)
- No. 105. Supersedes No. 40, dated August 9, 1938. Procurement of repair parts for Kohler generating sets. (September 28.)
- No. 106. Procurement of repair parts for Gray Marine Motors. (September 28.)
- No. 107. Supersedes No. 45 and Supplement No. 1 thereto. Mandatory contract for the procurement of spark plugs for use in Government-owned internal combustion engines, except aircraft (Class 17, Supplement No. 1). (September 30.)
- No. 108. Supersedes No. 40, dated August 9, 1938. Procurement of propellers for use on Bureau-operated motor boats. (September 30.)

The following memoranda to field officers have been issued in the "Boat Maintenance Memoranda" series:

- No. 13. Amendment No. 1. Reports on Government-owned floating equipment.  
(September 27.)

## PUBLIC RELATIONS

Official Publications.---The initial number of one of the new series of Biological Survey publications under the Department of the Interior was received from the Government Printing Office on October 13 (dated August), being No. 1 of the Wildlife Circular Series--"Regulations Relating to Migratory Birds and Certain Game Mammals: 1939" (13 pp.). The regulations for 1938 were issued as No. B.S. 92 of the Service and Regulatory Announcements, one of the series being superseded by the Wildlife Circulars.

Another Bureau serial now being issued under the Department of the Interior is the processed Wildlife Leaflet Series, Nos. 141-144 of which appeared under August dates, No. 141 cited on page 183 of the August SURVEY, and Nos. 142-144 on pages 215-216 of the September issue. This series is a continuation of the Bureau's series of Wildlife Research and Management Leaflets, Nos. 1 to 140 having been issued under the Department of Agriculture.

Outside Publications.---Articles by members of the Survey appearing in outside publications have been reported as follows:

- Aldous, C. M. Studies on woodcock management in Maine, 1938. Fourth North Amer. Wildlife Conf. Trans. 437-441. Sept. 1939.
- Allen, J. C. Ecology and management of Nelson's bighorn on the Nevada mountain ranges. Fourth North Amer. Wildlife Conf. Trans. 253-256. Sept. 1939.
- Bennett, L. J. (with P. E. Randall, junior author). Censusing ringneck pheasants in Pennsylvania. Fourth North Amer. Wildlife Conf. Trans. 431-436. Sept. 1939.
- Bourn, W. S., and Cottam, C. The effect of lowering water levels on marsh wildlife. Fourth North Amer. Wildlife Conf. Trans. 343-350. Sept. 1939.
- Coburn, D. R., and Quortrup, E. R. Recent findings in relation to the control of botulism in waterfowl. Fourth North Amer. Wildlife Conf. Trans. 359-363. Sept. 1939.
- Cooke, M. T. Flight speed of birds. In "A Book on Duck Shooting" by Van Campen Heilner. 405-420. Oct. 1939.
- Cottam, C., and Bourn, W. S. Need mosquito control be incompatible with wildlife? Fourth North Amer. Wildlife Conf. Trans. 121-130. Sept. 1939.
- and ----- Marshes of the past and future. In "A Book on Duck Shooting" by Van C. Heilner. 471-488. Oct. 1939.

- Cottam, C., and Williams, C. S. Food and habits of some island nesting birds of Great Salt Lake. *Wilson Bull.* 51: 150-155. Sept. 1939.
- Day, A. M. Is the Pittman-Robertson Act functioning properly for Wildlife? Fourth North Amer. Wildlife Conf. Trans. 12-16. Sept. 1939.
- Dill, H. H. Winter feeding and shelters for the California valley quail. Fourth North Amer. Wildlife Conf. Trans. 474-477. Sept. 1939.
- Einarsen, A. S. Oregon's open season on antelope in 1938. Fourth North Amer. Wildlife Conf. Trans. 216-220, illus. Sept. 1939.
- Enders, R. K. The corpus luteum as an indicator of the breeding of muskrats. Fourth North Amer. Wildlife Conf. Trans. 631-634, illus. Sept. 1939.
- Gabrielson, I. N. A continental review of the wildlife resource. Fourth North Amer. Wildlife Conf. Trans. 78-86. Sept. 1939.
- Girard, G. L. Notes on life history of the shoveler. Fourth North Amer. Wildlife Conf. Trans. 364-371, illus. Sept. 1939.
- Griffith, R. E. Effect of the 1938 hurricane on waterfowl areas on the North Atlantic coast. Fourth North Amer. Wildlife Conf. Trans. 406-410. Sept. 1939.
- Henry, C. J. Response of wildlife to management practices on the Lower Souris Migratory Waterfowl Refuge. Fourth North Amer. Wildlife Conf. Trans. 372-377. Sept. 1939.
- Hicks, L. E. (With D. L. Leedy, junior author). Techniques of pheasant trapping and population control. Fourth North Amer. Wildlife Conf. Trans. 449-461, illus. Sept. 1939.
- Hull, A. V. Trumpeter swans, their management and preservation. Fourth North Amer. Wildlife Conf. Trans. 378-382. Sept. 1939.
- Kalmbach, E. R. Nesting success: Its significance in waterfowl reproduction. Fourth North Amer. Wildlife Conf. Trans. 591-604. Sept. 1939.
- Lincoln, F. C. The waterfowl flyways of North America. In "A Book on Duck Shooting" by Van C. Heilner. 421-436. Oct. 1939.
- Lynch, J. J. Marine algae in food of Rhode Island waterfowl. *Auk* 56: 374-380. Oct. 1939.
- McAtee, W. L. Isely on protective coloration. [Survival value of acridian protective coloration, by F. B. Isely. *Ecol.* 19: 370-389, illus., 1938.] (Review). Privately printed, Washington, D. C., Oct. 1939.
- Martin, A. C., and May, F. H. (With T. E. Clarke, junior author). Early winter food preferences of the wild turkey on the George Washington National Forest. Fourth North Amer. Wildlife Conf. Trans. 570-578. Sept. 1939.
- Mills, E. M. Routing rodents. *Gardeners' Chronicle of Amer.* 43: 315-316. Oct. 1939.
- Pearson, A. M. (With G. C. Moore, junior author). Nesting habits of the mourning dove in Alabama. Fourth North Amer. Wildlife Conf. Trans. 468-473, illus. Sept. 1939.
- Peters, H. S. Pintail nesting in New Brunswick. *Auk* 56: 471. Oct. 1939.
- Black-terns in New Brunswick. *Auk* 56: 476. Oct. 1939.
- Rasmussen, D. I. Mule deer range and population studies in Utah. Fourth North Amer. Wildlife Conf. Trans. 236-243, illus. Sept. 1939.
- Utah's mule deer studies and management problems. *Amer. Wildlife* 28 (5): 232-240, illus. Sept./Oct. 1939.



- Sharp, W. M. Propagation of potamogeton and sagittaria from seeds. Fourth North Amer. Wildlife Conf. Trans. 351-358, illus. Sept. 1939.
- Smith, R. H. Wildlife management practices for overflow areas of the Lower Mississippi River Region. Fourth North Amer. Wildlife Conf. Trans. 395-399. Sept. 1939.
- Steenis, J. E. Marsh management on the Great Plains waterfowl refuges. Fourth North Amer. Wildlife Conf. Trans. 400-405. Sept. 1939.
- Taylor, W. P. Farmer-sportsman, a partnership for wildlife restoration. Fourth North Amer. Wildlife Conf. Trans. 155-162. Sept. 1939.
- Towle, R. E. Managing a western reclamation project for wildlife. Fourth North Amer. Wildlife Conf. Trans. 383-388, illus. Sept. 1939.
- Uhler, F. M., and Cottam, C. (With T. E. Clarke, junior author). Food of snakes of the George Washington National Forest, Virginia. Fourth North Amer. Wildlife Conf. Trans. 605-622. Sept. 1939.

Press Statements, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Waterfowl season opens October 1 in 8 States. Press statement P. N. 77322. Released Sept. 29.
- War seen as threat to fur conservation. Press statement P. N. 77738. Released Oct. 4.
- Government will sell 299 buffaloes, elk, and deer. Press statement P. N. 78890. Released Oct. 16.
- Three hunters pay \$755 for violating migratory waterfowl regulations in Texas. Press statement P. N. 79025. Released Oct. 16.
- Move 23 bighorn sheep 800 miles to former home in Oregon mountains. Press statement P. N. 79295. Released Oct. 19.
- Plenty of silver fox available; fear effect of European dumping. Press statement P. N. 79361. Released Oct. 19.

#### WILDLIFE RESEARCH

Makes Field Trip.--Mr. Couch left Washington on October 15 for New York City, where he presented a paper on research in wildlife refuge administration before the National Association of Audubon Societies. Conferences were held with J. N. Darling, C. K. Davis, M. Hartley Dodge, and other members of the Board of Trustees of the American Wildlife Institute.

Mr. Couch then went to New Haven, Conn., and other points in New England. He discussed various problems with John Pearce, who is working on forest wildlife relationships in the New England States. The work on the Pillsbury Reservation in New Hampshire was inspected, and effects of the hurricane last year on wildlife were noted. Conferences were held at the University of Connecticut with Professors Moss and Hosley. Plans for publishing the results obtained by the former cooperative research unit at Storrs were formulated. Mr. Couch returned to Washington on October 21.

Plan to Restore Tillamook Area.---Arthur S. Einarsen, leader of the Oregon Cooperative Wildlife Research Unit, reports that following a second devastating conflagration over the original Tillamook Burn, where little vegetation was left on thousands of acres of land, the Oregon State Game Commission requested a survey and suggestions on the management of the area. Nearly a week was spent on this work, and at a meeting of the Commission on September 14, a report was rendered before the fire had yet cooled down. The State Game Commission accepted the Oregon Cooperative Research Unit's report and the management plan suggested. The Commission set aside \$3,000 to begin the rehabilitation of the area by "spot seeding" game foods and to protect the game still present, which include a nucleus of deer, elk, grouse, and mountain quails. A plan has been submitted to use Federal Aid funds for this restoration work.

Students Prepare Wildlife Theses.---Considerable student interest in the field of wildlife management is being shown as the new school year begins, Mr. Einarsen said. He announced that four graduate students have chosen the following projects for their theses: (1) The effect of domestic and feral housecats on upland game populations in the Willamette Valley; (2) The Douglas ground squirrels as predators on game in the Willamette Valley; (3) The life history and management of the mountain quail; and (4) The effect of upland game upon agricultural crops.

One other thesis choice remains yet to be made. In addition to the above subjects a "Key for the Classification of Waterfowl Foods in Western Oregon" will be prepared, Mr. Einarsen said.

#### Wildlife Surveys

Sees Few Turkey Poults at Wichita.---A scarcity of turkey poults was noted on the Wichita Mountains Wildlife Refuge, Okla., during September by Junior Biologist Frank B. McMurray. He reports, however, that he did not observe all the flocks of turkeys on the area. In some instances it was very difficult to segregate the older and younger birds. The majority of young turkeys seem to be in the vicinity of refuge headquarters at the present time. Groups of hens with no young are frequently observed, he added. Gobblers, especially the younger birds, are beginning to mix with the hens, but the older males usually appear to be content to remain by themselves.

Contribute Articles to Big-Game Book.---Three Bureau scientists contributed four articles on the description and distribution of certain mammals in the "North American Big Game", a 533-page book published in September under the auspices of the Boone and Crockett Club and compiled by the Committee on Records of North American Big Game, of which Alfred Ely is chairman. The contributions and their authors include The Caribou--Description and Distribution, pages 239-246, by Olaus J. Murie; The Mountain Sheep--Description and Distribution, pages 285-290, by Hartley H. T. Jackson; The Puma--Description and Distribution, pages 407-414; and The Jaguar--Description and Distribution, pages 421-426, by E. A. Goldman. The book is an enlarged and more comprehensive edition of "Records of North American Big Game", issued in 1932.

Will Go to Texas.---Dr. Harry C. Oberholser left Washington on October 25 for a trip to Texas and California in the interest of a publication on the birds of Texas. He will study specimens in museums and consult with the members of the Texas Academy of Science, and other Bureau cooperators, in connection with the completion of this book. His itinerary will include Houston, San Antonio, Dallas, and other points in Texas, and southern California.

Visits Mammal Laboratory.---John B. Lewis, of Amelia, Va., was a visitor at the mammal laboratory on October 12 and 13. He has long been a Bureau cooperator and as early as 1887 collected mammal specimens that are now in the Bureau collection.

#### Food Habits Research

Inspects Bombay Hook Project.---On September 27, Dr. Bell, in company with Dr. Cottam and Mr. Saylor, inspected mosquito-control projects in Delaware and checked over experimental research work now in progress at the Bombay Hook Refuge.

Plan Mosquito Control on Jones Beach.---At the request of the National Association of Audubon Societies, on September 28 Dr. Clarence Cottam inspected the Jones Beach Bird Sanctuary on Long Island where mosquito control had been in progress. In company with officials of the Park, Audubon Society officials, and the County Mosquito Control Commissioner, he helped to outline a plan of mosquito control that would be least inimical to wildlife interests.

Alabama Mosquito Study Progresses.---Some 225 bottom and vegetation samples were taken from various areas on the Pickwick and Wheeler Reservoirs of the Tennessee Valley Authority as part of a study to determine the effect of larvicides on aquatic organisms, Junior Biologist Albert H. Trowbridge reported. This work is part of a study on the



relationship between mosquito control and wildlife conservation, which is being conducted cooperatively by the Bureau of Fisheries, the Bureau of Entomology and Plant Quarantine, the U. S. Public Health Service, the Tennessee Valley Authority, and the Biological Survey.

Use Beacon for Duck Control.---Efforts are being made by Johnson A. Neff, assistant biologist at Sacramento, Calif., to check the depredations of wild ducks in the rice fields. A revolving beacon, which proved effective when operated by Mr. Uhler in Michigan in September 1938, was shipped to Sacramento for use in Mr. Neff's experiments. The Sacramento Refuge at Willows, Calif., was selected as an excellent site for this work. Peter Van Huizen, refuge manager, is cooperating in the tests, and it is hoped that this apparatus will be successful in repelling ducks from the rice fields in that area. In Michigan, Mr. Uhler had 100 percent effective results in small (10-acre) buckwheat fields.

Investigates Ecological Conditions.---The effect of water-level fluctuations at the Wheeler Migratory Waterfowl Refuge, Ala., on various species of duck foods that were recently planted was observed by Mr. Trowbridge. He reported that excellent germination of wild millet was noted but that there seemed to be strong competition between the wild millet and heavy growths of cockleburrs that have appeared on the area. Mr. Trowbridge collected about 200 species of aquatic plants in preparation for a report on the vegetation found below the 556 contour.

#### Distribution and Migration of Birds

Broadcasts.---A 15-minute discussion of bird migrations was broadcast over the Mutual Broadcasting Company network on October 22, by "America's Wildlife", the regular Sunday program sponsored by the American Wildlife Institute. Mr. Lincoln spoke on present-day knowledge of migration habits.

Discusses Bird Migrations.---On October 16 Mr. Lincoln addressed the Garden Department of the Takoma Park (Md., D.C.) Woman's Club. He spoke on bird migration, introducing the subject with the history of the early observations and their influence upon ancient peoples and concluding with a summary of modern investigations and the practical results that are obtained in aiding in the administration of an important natural resource.

Addresses Camp Group.---Miss May Thatcher Cooke addressed the girls in camp at Holiday House near Alexandria, Va., on September 7. She discussed various phases of bird banding.

Foreign Visitors.---Dr. Abelardo Moreno, professor of zoology at the University of Habana, visited the Washington office on September 12. The next day Christopher Swabey, of the Colonial Forest Service, Jamaica, B.W.I., called on Mr. Lincoln. Both Dr. Moreno and Mr. Swabey were much interested in the Bureau's work on bird migration, particularly the banding method. They indicated their intention of making efforts to establish banding stations in Cuba and Jamaica. Biological Survey bands probably will be used.

Activities of the Flyway Biologists.--Harold S. Peters, the Atlantic Flyway biologist, visited the Washington office on October 13. He told interesting details regarding his trip with the Canadian Arctic Patrol and showed a fine collection of photographs taken on that trip. He left for headquarters in Charleston, S. C., the next day.

C. E. Gillham, the Mississippi Flyway biologist, and Dr. George B. Saunders, the Central Flyway biologist, have returned to headquarters in Edwardsville, Ill., and Denver, Colo., respectively. They will prepare their reports on the past summer's work.

Luther J. Goldman, the Pacific Flyway biologist, after reporting conditions in Alaska is en route to Mexico to continue his winter investigations of the waterfowl conditions in that country.

### Fur Resources

Visits from University of Hawaii.--B. A. Tower, of the Extension Department of the University of Hawaii, visited the U. S. Rabbit Experiment Station, Fontana, Calif., on September 9. Apparently proper feeds and feeding are the chief rabbit-raising problems in Hawaii, since most of the concentrates must be obtained from the mainland. There are a number of locally grown roughages that Director Templeton believes, from their description, would be well adapted to the feeding of rabbits. Not a few residents of the Islands have visited the Station in recent months.

4-H Rabbit Club Wins Honors.--The Fontana, Calif., 4-H Rabbit Club made a clean sweep of the doe and litter meat classes in the recent Los Angeles County Fair, winning first, second, and third prizes. This club is under the direction of Allan Suitor, superintendent of the Rabbit Experiment Station. Mr. Suitor's son, John Allan, showed a doe and litter that won first prize and attracted considerable attention because the litter was heavy and exceptionally well finished and the hutch was equipped with a self-feeder made from a five gallon oilcan. The self-feeder is a "homemade" one that the rabbit station recently developed.

Purchases Additional Nutria from Canada.--The Bureau has recently purchased one male and two female nutria from a breeder in Canada. These animals are the tenth generation of pen-raised stock that have been improved by selective mating. Including the new animals, 5 adult and 4 young nutria are now available for fur research studies at the U. S. Fur Animal Field Station, Blackwater Refuge, Cambridge, Md. The four-months nutria weighed approximately 5-1/2 pounds each, Dr. Herbert L. Dozier said.

Notes New Color Mutation in Muskrat.--A fawn-colored mutant of the Maryland muskrat (*Ondatra zibethica macrodon*) occurs on a few limited marsh properties along the Chester River in Kent County within a radius of 3

miles, according to Dr. Dozier, director of the Fur Animal Field Station. The pelt of this mutant is a uniform fawn, though slightly lighter along the sides and belly. The pelt and feet of this phase are very pale. A local trapper, who has been familiar with this area since 1924, reported trapping as many as four to six muskrats of this color in a catch of 200. An interesting feature of this trapper's report is that no white, or smoky white, muskrats have been taken or reported from this particular area since 1924.

Muskrats Build Houses Early.---Taking advantage of the high tides on the Blackwater Migratory Bird Refuge during the latter part of August, muskrats built houses of very substantial construction, Dr. Dozier reports. Last year the animals did not build new homes until September. Marsh vegetation seemed to be turning brown much earlier, Dr. Dozier noted. A study area was set aside to determine whether these new houses are temporary and built because of the high tides or are permanent ones that will be enlarged and used as winter quarters. In general the conditions of high water and tide appear quite favorable to the muskrats because their activities were increased in all parts of the refuge, Dr. Dozier said.

Ten Groups Visit Station.---Ten groups interested in fur ranching visited the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., during September, Director Charles F. Bassett reported.

#### Disease Control

Restocking Activities on Pisgah.---On October 9 and 10 Dr. J. E. Shillinger was on the Pisgah National Forest, N. C., inspecting the deer maintained at the fawn-rearing plant preparatory to their movement to new locations for restocking by the Forest Service. Because of the recent losses from disease encountered on the Pisgah, it was arranged that the transported animals be placed in enclosures where they may be observed for several weeks before releasing as a precaution against the spread of disease.

Meets with Fur Farmers.---For several weeks in October Dr. Frank D. McKenney, stationed at the State College of Washington, Pullman, Wash., held a series of conferences with fur farmers of the northwestern States. He accompanied officials connected with the fur industry in Seattle, who arranged dates for group meetings. The members gave Dr. McKenney an opportunity to present information on disease control on fur ranches. This is a subject of vital importance to fur-animal breeders.



## FEDERAL AID IN WILDLIFE RESTORATION

Continue Turkey Restocking.---With the experience gained in its wild turkey restocking project last year and with the information assembled from its wild turkey research project for additional guidance, Arizona will continue to live-trap and move native turkeys from selected areas, where these fine game birds are relatively abundant, to desirable ranges now badly in need of stocking.

By means of a Federal Aid project, approved October 3, plantings will be made on protected national forest areas in the Cataline, Chiricahua, Pinalino, and Bradshaw Mountains, where hunting and unwise range practices in the past resulted in the extirpation of the turkey populations. These limiting factors have been brought under control through the efforts of the United States Forest Service and the State Game Department. Food and cover conditions on the selected planting sites are good, and sufficient water is available. The Bureau of Indian Affairs and the Forest Service will cooperate with the Arizona Game and Fish Department in this undertaking.

Build Pathology Laboratory.---The determination of the distribution and importance of the various diseases and parasites affecting wildlife is an integral part of the game management investigational work conducted by the Division of Fish and Game of the Conservation Department of the State of New York. The volume of this work has been substantially increased through the need for handling materials collected in the field by personnel employed on the cooperative research program being conducted under the Federal Aid in Wildlife Restoration Act. A pathologist has been employed on this cooperative program to handle the laboratory work resulting from the Federal Aid field activities.

Adequate laboratory facilities for pathologists are not now available in Albany or its vicinity. To remedy this deficiency the State Conservation Department will use part of its Federal Aid funds to construct a laboratory at the Delmar Research Center, a few miles from Albany, N. Y. The project was approved on October 16.

Labor costs for the structure will be borne by a WPA project sponsored by the Conservation Department. As a result, the cooperative Federal Aid development project will only be obliged to bear the costs of materials and supervision.

Office space will be available in the laboratory building for the field men now working on the Federal Aid research program. This is desirable because it will enable the field men to maintain closer contact with the pathologist, thereby insuring better correlation of the entire research program.

Conduct Ecological Investigation.---On October 10, the Pennsylvania Game Commission received approval to use part of its Federal Aid funds for ecological investigations by which it desires to ascertain the exact food and cover requirements of the ring-necked pheasant, Hungarian partridge,

bobwhite quail, and cotton tail rabbit, and the methods by which the best food and cover conditions may be maintained under a State-wide management program. The problem will be approached from its physiological aspects, and both field and laboratory studies will be conducted.

The results obtained from these investigations, which will probably continue for a 5-year period, will be used to determine a sound food and cover development program designed to benefit Pennsylvania's small game.

Keystone State Studies Deer.---The relationship of nutrition to reproduction among white-tailed deer will be studied by the Pennsylvania Game Commission. The Commission hopes to determine the normal rate of reproduction of the species, the normal sex ratio of the progeny, and the effect of varied food conditions on the rate of reproduction and on the progeny's sex ratio. The project, financed with the help of Federal Aid funds, was approved on October 3.

Groups of animals as nearly identical as possible will be confined in separate pens where all conditions other than those related to nutrition will be identical. The effects of favorable and unfavorable nutrition on the reproduction rate of deer and on the sex ratio of the progeny will be carefully studied.

Five years will be devoted to this experiment. Fifty deer are available the first year, and the number of animals will be increased to a maximum of 250 as the study progresses.

Stock Quail on Sumter Forest.---The Piedmont Region of South Carolina, a part of which is now embraced in the Sumter National Forest, was in years past one of the best quail areas in the southeast. Exploitation of natural resources, hunting pressure, and long open seasons have been responsible for a progressive decline of the quail populations from year to year. Under the administration of the Forest Service field crops on farms within the forest are now limited to corn, small grains, hay, clover, and a maximum of 25% in cotton. These practices have afforded excellent food and cover for a far greater number of quail than now exists. The South Carolina Game and Fish Department recently received approval for a Federal Aid project to stock these areas to provide required seed stock in the improved area. Cooperative agreements obtained by the Game and Fish Department with the Forest Service and its farm lessees provide for the protection of the quail stocked by the department until population increases provide a shootable surplus.

Texas Plans Antelope Restoration.---At present the principal Texas antelope herds are confined to comparatively small areas of fenced pasture. Some of the herds must be reduced because of the competition with domestic livestock for available forage. The failure of the antelopes to show satisfactory increases is ascribed to present unsuitable environmental conditions. To relieve this situation and to provide for the spread and increase of this species so that its place

in the fauna of the State will be made more secure, the Texas Fish, Game, and Oyster Commission will use some of its Federal Aid funds to trap antelopes on overcrowded areas and move them to more suitable ranges. Care will be exercised in the selection of planting sites to assure desired population increases. While antelopes are now protected by State law, the owners of the lands where they are to be released will be required to prohibit hunting of any kind on their lands.

The Commission will collect and compile data on the weight, age, and sex of the antelopes moved. The animals will be tagged, and information will be gathered on predation, disease, parasites, weather, and other limiting factors on which adequate information is not now available. These studies, it is believed, will prove valuable in determining what should constitute effective range management practices.

First Federal Air Project Completed.—The first project to be approved when the Federal Aid in Wildlife Restoration program started last year was submitted by the Utah Fish and Game Department. The project was recently completed. More than 5 miles of dikes were constructed. The project included spillways and other water control structures designed to improve waterfowl conditions at the delta of the Weber River. The purpose of the work was to stabilize water levels on about 3,000 acres and thereby eliminate recurring epizootics of western duck sickness.

In harmony with its long range plans for the area, the Utah Fish and Game Department has submitted a second work segment for the current fiscal year. The work outlined includes the construction of an additional dike, a spillway, and other structures to insure better distribution and circulation of water within the impoundment area. This project was approved on October 10.

Utah Buys Feeding Area.—Although adequate summer deer range is available on the Cache National Forest, a decided deficiency of winter range exists. Winter feeding by the Utah Fish and Game Department has been necessary, and for 4 years this department has purchased approximately 100 tons of alfalfa each year from the owner of a 120-acre tract of land adjoining the forest. These privately owned lands have also been a winter concentration point for deer forced to abandon the higher altitudes of the forest.

Located 2 miles northeasterly of Logan, Utah, the site of Utah State Agricultural College, the parcel affords a desirable source of food, functions as a feeding station, and constitutes an advantageous location for deer studies by the Wildlife Experiment Station attached to the college. A project to purchase the area was submitted by the Department of Fish and Game and was approved on October 2.



Virginia Continues Deer Restocking.--As its first project under the Federal Aid in Wildlife Restoration program the Virginia Commission of Game and Inland Fisheries in December 1938 proposed stocking deer on the George Washington and Jefferson National Forests and adjacent areas closed to deer hunting. The Commission desired to reestablish deer on suitable ranges from which the animals had disappeared or on which they existed in too small numbers to build up to the carrying capacity of the areas within a reasonable time. This project was approved by the Biological Survey. As a result 211 deer were obtained from sources outside Virginia and liberated on the selected sites.

The successful completion of this project has encouraged the Virginia Commission to submit a similar one this year. The second deer restocking project was approved on October 12. Releases of acquired deer will be limited to counties where suitable steps have been taken by the authorities to restrict the ranging of dogs. No deer hunting will be permitted in restocked localities until the population has increased sufficiently to warrant an open season. The Forest Service is cooperating with the State on liberation work planned on national forest lands.

Restore Wild Turkeys.--The Thomas Jefferson National Forest and adjacent lands in southwest Virginia were once the home of large numbers of wild turkeys. Prior to the recent purchase of this forest area, uncontrolled and, in many instances, illegal hunting had eliminated these game birds from a considerable portion of the mountain section of the State. Now, extensive areas with ideal food and cover in this forest are or will be closed to hunting. On October 6 a Federal Aid project was approved to permit the Virginia Commission of Game and Inland Fisheries to restore populations to the carrying capacity of available ranges. Specifically, the Commission will restock sizeable areas of suitable turkey range set aside as game refuges, maintain special patrols to protect the turkeys, and obtain the support of sportsmen and farmers in the program, so as to provide a future huntable surplus.

## LAND ACQUISITION

### Surveys and Maps

Map Work Progresses.--Acquisition status maps for the Bureau atlas have been completed on the scale of 1 inch to 1 mile and are available for printing and distribution for the following refuges: Apache, Ariz.; Brevard, Cedar Keys, Fort DeSoto, and Pelican Island, Fla.; Piedmont, Ga.; Camas, Idaho; Chautauqua, Ill.; Kentucky Woodlands, Ky.; Breton, La.; Black Coulee and Hewitt Lake, Mont.; Niobrara, Railroad Valley, and Ruby Lake, Nev.; Bosque del Apache, N. Mex.; Montezuma, N. Y.; Pea Island, N. C.; Des Lacs, Lostwood, and Upper Souris, N. Dak.; Three Arch Rocks, Oreg.; Carolina Sandhills, S. C.; Lacreek and Lake Andes, S. Dak.; Necedah and Trempealeau, Wis.; and Bamforth Lake, Wyo.

Completes Kentucky Survey.---Oswald E. Recroft, assistant cadastral engineer, has recently completed an assignment on the Kentucky Woodlands Wildlife Refuge, Ky. He is now engaged on boundary surveys on the Upper Mississippi River Wildlife and Fish Refuge, Minn.

Staked Aransas Refuge.---Bert J. G. Tousey, assistant cadastral engineer, and Merland H. Benedict, engineering aide, have completed the staking of the proclamation boundary on the Aransas Refuge, Tex.

Personnel.---The following new appointees have recently reported for duty on the Moosehorn Migratory Bird Refuge, Maine: Frank S. Farquhar, Raeburn Macdonald, and Martin C. Gowdey, engineering aides; and John A. Wilson and Frank S. Hemmings, junior engineering aides.

### Appraisals and Negotiations

Confers With Commission.---William L. Towns, associate land valuation engineer of the Des Moines office, appeared in Federal Court at Helena, Ark., on October 3 to testify in a case concerning the White River Migratory Waterfowl Refuge. From Helena he went to St. Paul, Minn., where he conferred with representatives of the State Conservation Commission.

Acquires N. Dak. Lands.---Richard H. Putnam, assistant land negotiator stationed at Des Moines, has completed assignments on the Chautauqua Refuge, Ill.; Necedah Refuge, Wis.; and Lake Bowdoin and Medicine Lake Refuges, Mont. He is now engaged on the acquisition of lands on various North Dakota projects.

Goes to Illinois Court.---Charles S. Cook, supervisor of the Central Area, recently attended Federal court at Springfield, Ill., and conferred with representatives of the Department of Justice relative to the acquisition of the Chautauqua Refuge.

Examines Tamarac Area.---Martin Harylow, senior acquisition aide at Des Moines, is on the Tamarac Migratory Waterfowl Refuge, Minn., to examine additional lands.

Appraises Proposed Refuge Sites.---Albert J. Rissman, land valuation engineer, is in Pennsylvania to appraise and examine proposed refuge projects under the Federal Aid to Wildlife Restoration program.

### WILDLIFE REFUGES

Surplus Big-Game Go on Sale.---This year 299 big-game animals are offered for sale from the herds at the Sullys Hill Game Preserve, N. Dak.; Fort Niobrara Game Preserve, Nebr.; and National Bison Range, Mont. The surplus animals included 156 buffaloes, 100 mule deer, and 43 elk.

Buildings at Big Lake Remodeled.---The residence building on the Big Lake Refuge, Ark., has been completely remodeled by WPA labor, Refuge Manager Olin H. Cash advises. It now has two bedrooms, a kitchen, dining room, bathroom, living room, three clothes closets, and two large porches. The service building also has been remodeled.

Albino Green-Winged Teal Reported.---Peter J. Van Huizen, refuge manager of the Sacramento Migratory Waterfowl Refuge, Calif., reports that on September 22 he noted a small flock of green-winged teal on the refuge with a pure-white bird among them. He thinks it was an albino teal since it agreed in form, size, and flight characteristics with the remainder of the flock. The flock was seen on three occasions, and the white bird was observed each time.

Western Grebe Observed on Chautauqua.---Mr. Kubichek, in charge of the Section of Habitat Improvement, states that while he was inspecting the Chautauqua Migratory Waterfowl Refuge, Ill., this fall with Refuge Manager Philip Nelson, he observed a western grebe. This is an unusual record since the range of this bird is considerably west of Illinois. The A.O.U. Check List reports the bird as ranging only casually in this State.

Reports Wild Turkey Increase.---Observations by refuge personnel, WPA workers, and residents in and about the Kentucky Woodlands Wildlife Refuge, Ky., indicate that there has been a considerable increase in the wild turkey and quail populations on the area, according to Refuge Manager Gerald F. Baker.

Moosehorn Recreation Area Popular.---About 6,000 persons picnicked on or otherwise made use of the recreation area on the Edmunds unit of the Moosehorn Refuge, Maine, during July, Refuge Manager Walter P. Schaefer reports.

Artificial Singing Grounds Used by Woodcocks.---Seven of the twelve artificial singing grounds constructed on the Moosehorn Refuge were used by woodcocks this year, according to Mr. Schaefer.

Reports Good Duck Crop.---Five hundred pairs of black ducks and 400 of blue-winged teals nested on the Blackwater Migratory Bird Refuge, Md., this year, Refuge Manager David V. Black reports. These figures are considerably higher than for previous years.

American Egrets Nest on Upper Mississippi.---Ray C. Steele, superintendent of the Upper Mississippi Wildlife Refuge, has submitted an interesting report and pictorial record of the first occurrences and nesting of the American egret on the Trempealeau and Upper Mississippi Refuges. He states that the first pair was observed in the locality on May 20, 1936. The next records were of five adults seen on July 20 and eight on July 25, 1938. As the season advanced, it was not



uncommon to see flocks of as many as 25 birds throughout the entire length of the Upper Mississippi Refuge. The last observation in 1938 was on October 8.

On April 26, 1939, a pair was seen on the Trempealeau Refuge, Wis., and on May 10, 15 birds were observed on the Upper Mississippi Refuge. On May 27, four adult birds were seen near a nesting colony of double-crested cormorants and great blue and black-crowned night herons, and on July 8, 1939, three egret nests were located in the heron and cormorant rookery.

From a blind, Mr. Steele was able to get some excellent pictures of the adults and their nests and of the young in the various stages of growth until they left the nests on July 31.

Good Wild Millet Crop on Squaw Creek.---Refuge Manager Percy L. DePuy, of the Squaw Creek Migratory Waterfowl Refuge, Mo., reports that approximately 1,000 bushels of wild millet were harvested on the refuge. It will be used for distribution to other areas where its growth is not so abundant. The cost of harvesting the millet averaged little more than one cent a pound.

Swan Nesting Mounds Built at Red Rock Lakes.---Sixty-eight artificial nesting sites were constructed for the trumpeter swans on the Red Rock Lakes Refuge, Mont., during the past year, Refuge Manager Archie Hull reports. Refuge personnel observed that these mounds generally are not used by the birds until the second year after construction, when muskrats have covered the mounds with heavy roundstem bulrush stalks. This year the bulrush topcoat was added during construction. While first-year mounds have not been used by swans for nesting, they are used as night resting places. In fall, the mounds are placed on the ice and the material is well settled by the time the ice melts.

Many Ducks Visit Red Rock Lakes.---Mr. Hull estimates that in the latter part of August about 400,000 migrant ducks were on the Red Rock Refuge. Most of the birds were pintails, wigeons, gadwalls, and mallards. He states that lesser scaups and canvasbacks produced more young on the refuge this year than in any one of the past 5 years.

Many Sagehens on Sheldon Refuge.---Superintendent E. R. Sans, of the Charles Sheldon Antelope Refuge, Nev., reports that sagehens had a successful breeding season on the refuge, the broods averaging seven birds. About 50 birds are staying near the headquarters, roosting on the porches and in the garage. One brood of 12 young Hungarian partridges was seen on the refuge this year, the first Mr. Sans has observed since he has been stationed there.

Wild Horses Range on Refuge.---About 250 wild horses range on the Charles Sheldon Refuge, according to Mr. Sans. Usually the horses are seen in groups of 10 to 25. Quite a few colts have been observed recently.

Green-winged Teals Nest on Montezuma.---A pair of green-winged teals nested and raised their young on the Montezuma Migratory Bird Refuge, N. Y., this summer, according to a report received from Refuge Manager Merton Radway. Nesting of this species in the locality is rare, although a few pairs had previously been reported nesting on adjoining marshes.

Yellow-billed Tropic Bird Found in N. C.---Refuge Manager S. A. Walker, of the Pea Island Migratory Waterfowl Refuge, N. C., reports that in July he picked up a dead yellow-billed tropic bird on the north shore of Oregon inlet, 1 mile from the refuge. Dr. T. Gilbert Pearson, in a letter regarding this bird, says, "This is the first time the tropic bird has ever actually been taken in North Carolina."

Two Longhorn Cattle Die.---An 8-1/2-year-old brindle steer was found dead on the Baker Peak range in September, Superintendent George E. Mushbach, of the Wichita Mountains Wildlife Refuge, Okla., reports. It had been dead for some time, and the cause of death was not ascertained. "Buttercup", an aged yellow cow and one of the two last members of the original herd, died in August, leaving only "Old Red", now more than 20 years old, of the group transferred to the refuge in 1927. The other animals in the herd of 147 are in excellent condition.

Mountain Sheep Transferred to Hart Mountain.---Twenty-three mountain sheep, consisting of seven rams, thirteen ewes, and three lambs, have recently been transferred from the National Bison Range, Mont., to the Hart Mountain Antelope Refuge, Oreg.

Rains Good at Waubay.---Refuge Manager Donald Ambrosen, of the Waubay Migratory Waterfowl Refuge, S. Dak., reports that almost 3 inches of rain fell on the refuge on August 30. The smaller lakes and potholes were raised about 5 inches, and the larger lakes from 3 to 4 inches.

Aransas Has Record Quail Crop.---More bob-white quails were produced on the Aransas Migratory Waterfowl Refuge, Tex., this year than in any one of the last 10 years, Refuge Manager James O. Stevenson reports. Coveys were noted in almost every section of the area.

Raccoon Trapped Near Little Pend Oreille.---Refuge Manager John E. Schwartz, of the Little Pend Oreille Wildlife Refuge, Wash., reports that a male raccoon, weighing 20 pounds, was caught in a beaver trap about 5 miles north of the refuge by a State trapper. According to local authorities, this is the first time in at least 25 years that a raccoon has been recorded in this area.

## CONSTRUCTION AND C.C.C. OPERATIONS

Makes Field Trip.--Mr. Terhune left Washington on October 1 for Decatur, Ala., to meet J. J. Hedrick, C. C. C. inspector. Prospective personnel for the new camp at Wheeler Pool were interviewed, and other preparations for the arrival of the enrollees were made. On his return Mr. Terhune stopped in the Atlanta regional office to confer with the regional director and C. C. C. inspector. He arrived in Washington on October 4.

Mr. Terhune left Washington on October 16 for another field trip. He expects to meet Wilfred J. Gregson, C. C. C. inspector of Region 7, in Norfolk, Va. Together they will inspect Back Bay Camp BS-1, Va., Pea Island Camp BS-2, N. C., and Mattamuskeet Camp BS-3, N. C.

Attends Safety Meeting.--O. W. Teckemeyer attended the Twenty-eighth Annual National Safety Congress and Exposition, which was held in Atlantic City, N. J., on October 16 to 20. More than 10,000 representatives from the United States and foreign countries were present at the sessions.

Moosehorn News Items.--The following items appeared in the October 14 issue of Happy Days, the weekly newspaper for the Corps:

"Ayers, Me.--While the Department of Commerce is taking a national census of the population this fall, Co. 1129, representing the Biological Survey, will conduct a census of deer and moose in Moosehorn Reservation. A line of 105 enrollees will spread out to comb each of two areas about 600 acres in size. As the line advances, each enrollee will count the deer that spring out to the right of him. A count will be taken both before and after hunting season to determine approximately how many deer are driven into the reserve by hunters. Enrollees are looking forward to this encounter with wildlife. Photography fans are getting their cameras ready for action shots of the deer."

"Ayers, Me.--Whistling his way along a lonely trail to Co. 1129, Enrollee Leopold Roy suddenly realized that he was not alone. A glance over his shoulder told him that his escort was one of Moosehorn's finest specimens of black bear. Forgetting to whistle, the startled C-man made a bee-line into the woods. He stopped only when a leap through the glass window of an old shack landed him on the floor. After considerable quaking, he convinced himself that he was not being besieged and made a record-breaking dash back to camp."

P.W.A. Building Program at Patuxent.--Very satisfactory progress has been made in the construction work under way at the Patuxent Research Refuge, Md., according to recent reports. The addition to the animal laboratory is enclosed, and the slate roof is being placed. The second-story concrete floor slab of the food habits laboratory building has been



poured, and the brick work is practically completed to the ceiling of the second story. If the present progress is maintained the laboratory building will be completely enclosed and ready for the slate roof by the middle of November. It is expected that the buildings and outside service facilities will be substantially completed by February 1, 1940.

#### GAME MANAGEMENT

Deputies Meet in Chicago.--Sixteen U. S. Deputy Game Wardens met at their own expense in Chicago, Ill., on September 28 to receive instructions from Game Management Agent John M. Martin on the Migratory Bird Treaty Act regulations and their enforcement.

Seize Plumes Used in Movies.--During September the U. S. Customs Service seized large quantities of aigrettes and bird of paradise plumage from five moving picture companies, one custom company, and one plume company in Los Angeles, Calif. Some of the plumage had been used in two recent screen productions. An agent of the Survey cooperated with the Customs Service.

Eight Fined \$266.--Eight persons were apprehended in Kentucky during the first week in September by State conservation officers and a game management agent for hunting mourning doves in violation of State laws. In State courts, the violators paid fines and costs aggregating \$266.

Hunted Yellowlegs, Plovers, Ducks.--Seventeen persons were apprehended by Michigan and Federal officers on October 1 for hunting ducks, yellowlegs, and plovers in violation of State game laws. These men were taken into State courts where they were sentenced to pay an aggregate of \$190 in fines and costs. One shotgun was confiscated by the State.

Mourning Dove Violators Convicted.--As a result of cooperation between State game wardens and Biological Survey agents, 12 individuals were apprehended in Mississippi on September 15 for violating State game laws while shooting mourning doves. Each defendant appeared in State court and was fined \$10 and costs of \$5.25.

Hunted on State Refuge.--When a Nevadan went on a State game refuge to hunt mourning doves early in September, he was promptly arrested by a Biological Survey patrolman and taken to State court. The offender was fined \$25 for trespassing on a State game refuge.

Jailed for 30 Days.--An individual charged with hunting and killing wild ducks in Hyde County, N. C., on January 31, 1939, appeared before Judge I. M. Meekins in United States District Court at Washington, N. C., on October 2. The defendant was found guilty and sentenced to 30 days in jail.

Fines and Costs Average \$35 Each.--As a result of cooperation between State game wardens and agents of the Survey, 17 persons were apprehended in Tennessee early in September for hunting mourning doves illegally. The violators appeared in State court, entered pleas of guilty, and paid an aggregate of \$596.50 in fines and costs.

Fined One Cent.--Nineteen violators appearing before Federal Judge Elmer C. Davies in the United State District Court at Nashville, Tenn., on September 27 were found guilty and assessed a fine of one cent each. Seventeen defendants were guilty of hunting mourning doves over baited fields; two pleaded guilty to killing robins.

Three Men Pay \$755.--A battery manufacturer, of Dallas, Tex., and two of his guests recently paid a total of \$755 in fines and costs for exceeding the bag limit on ducks. The defendants voluntarily made settlements in State courts in Dallas. The manufacturer, who had more than 100 ducks in excess of the bag limit, paid a fine of \$500 and costs of \$33. One guest, a resident of Tulsa, Okla., was fined \$100 and costs of \$11 for killing 3 wild ducks without a nonresident license. The other guest also paid \$111 in fines and costs for possessing 16 wild ducks in excess of the bag limit.

Sentences were passed by Judges Lewis Sterrett and E. John Baldwin. Evidence was obtained by U. S. game management agents and Texas State game wardens.

Kills Ducks Out of Season.--A resident of Ellis County, Tex., who killed two wild ducks on April 1, was fined \$50 and costs of \$12 in State court on August 30. He paid the costs but was committed to jail for failure to pay the fine. A Federal agent and State wardens obtained the evidence.

23 Texas Hunters Pay \$1,315.--Twenty-three hunters in Brooks and Hidalgo Counties, Tex., were apprehended in September by Texas game wardens and a Survey agent for killing white-winged and mourning doves in violation of State game laws. Found guilty in State court, the hunters paid a total of \$1,315 in fines and costs.

Deer Hunter Serves 3 Months.--A hunter was apprehended on September 18 in Washington State with deer meat in possession during the close season. He entered a plea of guilty in State court, where he was fined \$250. Failing to pay the fine, he was committed to jail for 90 days. Evidence was obtained by State game protectors and a U. S. game agent.

#### PREDATOR AND RODENT CONTROL

Record Predator Catch Established in Oregon.--Predatory animal hunters in Oregon, working under the supervision of the Bureau, took 2,200 coyotes and 83 bobcats during August, according to a report

submitted by District Agent Roy Fugate. This catch of predators exceeds that of any previous month since cooperative predator control work was instituted in the State, Mr. Fugate said. The catch included 127 coyotes taken by Hunter Winlock Hendricks on the Malheur Migratory Waterfowl Refuge, and 118 coyotes and one bobcat taken by Hunter Stephen Green on the Hart Mountain Refuge.

Control Reduces Livestock Losses.--A letter received by the Washington Office, dated October 5, from a Rock Spring, Wyo., stock grower points out the effectiveness of the Bureau's cooperative predator control work in that area. The correspondent states that coyotes caused losses of 13-1/2 percent of his lamb crop on his ranges where no cooperative hunters were working, but that such losses amounted to 7 percent where control work had been conducted. He adds that the only effective method of controlling coyotes is through the employment of trained hunters, although other methods have been tried without success.